91:301-05

JUN - 7 1991

FILE

RECEIVED
OFFICE OF THE DIRECTOR
DEPT. OF HEALTH

'91 JUN -6 P12:41

RECEIVED

'91 JUN 13 A8:56

OFC. OF ENVIRON.
QUALITY CONTROL

May 30, 1991

MEMORANDUM

TO: The Honorable Edward Hirata, Director
Department of Transportation

SUBJECT: Final Environmental Impact Statement for Honolulu International Airport

I am pleased to accept the Final Environmental Impact Statement for the Honolulu International Airport as satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

This environmental impact statement will be a useful tool in the process of deciding if the action described therein should be allowed to proceed. My acceptance of the statement is an affirmation of the adequacy of that statement under the applicable laws and does not constitute an endorsement of the proposed action.

When the decision is made regarding the proposed action itself, I expect the proposing agency to consider if the societal benefits justify the environmental impacts which will likely occur. These impacts are adequately described in the statement and, together with the comments made by reviewers, provide useful analysis of the proposed action.

John Waihee

JOHN WAIHEE

cc: ✓Mr. Brian Choy, OEQC

bcc: Hon. John Lewin

FINAL

ENVIRONMENTAL IMPACT STATEMENT

HONOLULU INTERNATIONAL AIRPORT
HONOLULU, OAHU, HAWAII

State Project No. AO1011-03

Prepared for:

State of Hawaii
Department of Transportation
Airports Division

Prepared by:

Edward K. Noda and Associates
615 Piikoi Street, Suite 1000
Honolulu, Hawaii 96814

In Association with:

Chapman Consulting Services
and GK & Associates
900 Fort Street, Suite 1550
Honolulu, Hawaii 96813

APRIL 1991

HONOLULU INTERNATIONAL AIRPORT
HONOLULU, HAWAII
IMPROVEMENT PROJECTS: 1990-2010

FINAL ENVIRONMENTAL IMPACT STATEMENT

LEAD AGENCY: State of Hawaii
Department of Transportation
Airports Division
Honolulu International Airport
Honolulu, Hawaii 96819

Abstract

This document has been prepared to describe the potential environmental impacts that could result from the development of various projects proposed for Honolulu International Airport over the period 1990-2010. The proposed projects include various new facilities, expansion of existing facilities, facility relocations, and land acquisition and development. Implementation of the projects is not expected to cause significant short- or long-term adverse impacts to the physical or natural environment. Increased services could increase automobile traffic, elevate ambient noise levels and negatively impact air quality. Positive social and economic impacts are projected. Demands on public facilities and services will increase as a result of the proposed actions.

This Final Environmental Impact Statement is submitted for acceptance pursuant to Chapter 343, Hawaii Revised Statutes.

SUBMITTED BY:

DIRECTOR
STATE OF HAWAII, DEPARTMENT OF TRANSPORTATION

4/29/91
DATE

This Environmental document becomes a federal document when evaluated and signed by the Responsible FAA Official.

RESPONSIBLE FAA OFFICIAL

DATE

The preparation of this document was financed in part through a Planning Grant from the Federal Aviation Administration under Section 505 of the Airport and Airway Improvement Act as amended by the Airport and Airways Safety Expansion Act of 1987.

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

Page No.

TABLE OF CONTENTS (continued)

Page No.

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

Page No.

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

Page No.

TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

Page No.

LIST OF TABLES

LIST OF FIGURES

CHAPTER I
INTRODUCTION AND SUMMARY

1. INTRODUCTION

1.1 PURPOSE AND CONTENT OF THIS EIS

This Environmental Impact Statement (EIS) has been prepared to describe the potential environmental impacts that could result from the development of various projects (Table I-1) proposed for Honolulu International Airport (HIA) over the next twenty-year period (1990 to 2010). This EIS has been prepared pursuant to Chapter 343, Hawaii Revised Statutes and Title 11, Department of Health, Chapter 200, Subchapter 7, Sections 11-200-09 through 11-200-18, Section 102(2)(C) of the National Environmental Policy Act and Section 509(b)(5) of the Airport and Airway Improvement Act of 1982. Guidance was provided by the Federal Aviation Administration (FAA) Order 5050.4A, Airport Environmental Handbook. Descriptions of and need for the projects; the alternatives considered for each of the projects; the existing environmental conditions; the probable environmental consequences which could result from each project independently and, when possible, cumulatively; the mitigation measures which would be employed to minimize potential adverse impacts; and the relationship of the proposed projects to existing airport planning, land use plans, policies and controls are provided in the following chapters. The information contained herein has been drawn from site visits, planning, engineering and environmental studies conducted specifically for the projects and generally available information sources (see Chapter VIII, References) regarding the environmental characteristics of the project sites and surrounding areas.

It is noted that the level of planning and/or engineering for the projects listed in Table I-1 varies, resulting in differences in the level of detail for each project described herein. Consequently, in some instances, as will be noted in the text, this EIS represents the initial environmental analysis for those projects. This environmental analysis and documentation will be supplemented in the future, as required by environmental regulations in effect at the time additional project details are known. This process is known as tiering.

TABLE I-1

HONOLULU INTERNATIONAL AIRPORT PROJECTS DESCRIBED IN THIS EIS

(As of January 1991)

PROJECT TITLE	PROJECT NO.	ESTIMATED CONSTRUCTION PERIOD
Construct International Terminal Building Complex	AO1039-10 AO1039-11 AO1039-12 AO1039-13	1990-2010
Expansion of Overseas Terminal Hardstands/Gates, Diamond Head Concourse (Gates 3, 2, 1A, 1B, 1C, 1D, 1E and 2 unnumbered hardstands)	AO1038-15 AO1038-16 AO1038-17	1990-1995
Relocate HIA Satellite Fuel Facilities	Not Assigned	1996-2010
Automated People Mover System and Supporting Facilities	AO1012-1 AO1012-11 AO1012-12 AO1012-13	1990-2010
Construct Central Chiller System	AO1107-12 AO1107-13	1990-1995
Construct Aircraft Engine Runup Pad	Not Assigned	1990-1995
Install Microwave Landing System (MLS)	Not Assigned	2000-2010
Acquire Land for Airport Use	AO1116-03 AO1116-05 AO1116-06 AO1116-07	1990-2000
Construct New Air Cargo/Industrial Complex and Apron (Cargo City)	Not Assigned	1990-2000
Development of the Kapalama Lands	Not Assigned	1995-2010
Construct New Electrical Power Substations and Distribution Systems	AO1098-12	1990-1995

TABLE I-1

HONOLULU INTERNATIONAL AIRPORT PROJECTS DESCRIBED IN THIS EIS
(As of January 1991)
(Continued)

PROJECT TITLE	PROJECT NO.	ESTIMATED CONSTRUCTION PERIOD
Roadway Improvements and Additional Parking Facilities	AO1112-19 & Not Assigned	1990-2000
Landscaped Theme Park	AO1115-14	1990-1995
Lei Stand Relocation	AO1115-13	1990-1995
Construct Aircraft Wash Pad (South Ramp)	Not Assigned	1990-1995
Interisland Terminal, Mauka Pier Extension	Not Assigned	2000-2010

According to the Airport Environmental Handbook, tiering is appropriate in "environmental documents resulting from master planning covering specific short term projects, in a long term development context, to be followed at a later time by further specific projects which become ripe for decision."

HIA projects listed in Table I-2 have been described and environmental impacts analyzed in the Honolulu International Airport Master Plan Update & Noise Compatibility Program, Volume 3, Environmental Assessment (KFC Airport, Inc., 1989). This Environmental Assessment (EA) was filed with the State Office of Environmental Quality Control on October 23, 1989 and accepted on November 23, 1989. Projects covered in the EA are readdressed in this EIS only if substantive changes in the project have occurred since publication and acceptance of the EA. For certain projects, sufficient details do not presently exist to fully analyze their impacts at this time, and it is anticipated that further environmental analyses will be prepared at a later date. These projects are summarized in Table I-3.

TABLE I-2

HONOLULU INTERNATIONAL AIRPORT PROJECTS DESCRIBED IN 1989 ENVIRONMENTAL ASSESSMENT

PROJECT TITLE	PROJECT NO.	ESTIMATED CONSTRUCTION PERIOD
Realignment of Taxiways G and L (Consolidated with Project No. AO1021-17)	AO1021-14	1995-2005
Construction of Hazardous Cargo Hardstand	Not Assigned	1990-1995
Construction of Taxiway RS	Not Assigned	
Expansion of the Overseas Terminal	AO1038-13 AO1038-14 AO1038-15[1] AO1038-16[1] AO1038-17[1]	1990-2010
Modifications of Central Concourse Gates For International Arrivals	AO1037-18	1990-1995
Construction of New Interisland Terminal Complex	AO1121-17 AO1123-16 AO1123-17 AO1123-19 AO1123-20 AO1123-23	In Progress to 1995
Construct New Interisland Aircraft Maintenance and Cargo Facilities Subdivision and Realign Taxiways	AO1127-12 AO1127-13	1990-2000
Location of/Construct Airport Hotel/Overseas Parking Structure	Not Assigned	2001-2010
Relocation/Construction of North Ramp Commuter Terminal	AO1122-19 AO1123-20	1990-1995

TABLE I-2

HONOLULU INTERNATIONAL AIRPORT PROJECTS DESCRIBED IN 1989 ENVIRONMENTAL ASSESSMENT
(Continued)

PROJECT TITLE	PROJECT NO.	ESTIMATED CONSTRUCTION PERIOD
Development/Construction of the South Ramp Facilities	AO1130-11 AO1130-13 AO1130-15 AO1130-17 AO1144-13	1990-2000
New International Arrivals Building - This project has been replaced by the New International Terminal Building projects (AO1039-10 through AO1039-13) listed in Table I-1.		
Relocation of ARFF Facilities	AO1144-12	1990-1995
Construction of Ramp Service Roads	AO1021-17	1990-2000
Construction of a Police and Fire Helicopter Facility - This project has been deleted from HIA Improvement Projects.		
Location of/Construct Link to Honolulu Rapid Transit System	Not Assigned	2001-2010
Expand/Upgrade Base Maintenance Facility	AO1128-11	1990-2010
Acquire Land for Airport Use (Hickam & Kapalama Lands)	Not Assigned	1990-2000

Note:

(1) The 1989 EA included Gates 3, 4 and 5 but not Gates 1B, 1C and 2. Therefore these gates are included in this EIS as shown in Table I-1.

TABLE I-3

HONOLULU INTERNATIONAL AIRPORT IMPROVEMENT PROJECTS
FUTURE ENVIRONMENTAL DOCUMENTATION ANTICIPATED

PROJECT TITLE/NUMBER	TYPE OF DOCUMENTATION
Construct South Ramp Wash Pad	Environmental Assessment
Closure of the Aolele Street Freeway On-Ramps	Environmental Assessment
Interisland Terminal, Mauka Pier Extension	Environmental Assessment

1.2 APPLICANT

The State of Hawaii, Department of Transportation, Airports Division is the applicant for the projects described in this EIS. The following lists and briefly summarizes the projects described in this EIS.

1.3 SUMMARY OF PROJECTS

The proposed new facilities are listed and briefly described below.

INTERNATIONAL TERMINAL BUILDING COMPLEX

The International Terminal Building (ITB) Complex is located in the Diamond Head Service Court of the Overseas Terminal at Honolulu International Airport (HIA) and consists of the ITB, Diamond Head Concourse Extension and Site Facilities (SF). It will occupy an area of approximately 43 acres. In order to construct Program Activity Level -

1 (PAL-1) of the ITB, it will be necessary to relocate present tenants of the Diamond Head Service Court and adjacent areas. The tenants to be relocated are listed in Chapter II, section 2.2.

EXPANSION OF OVERSEAS TERMINAL HARDSTANDS/GATES, DIAMOND HEAD CONCOURSE (GATES 3, 2, 1A, 1B, 1C, 1D, 1E, AND 2 UNNUMBERED HARDSTANDS)

The Overseas Passenger Terminal at HIA consists of aircraft parking positions; a terminal building; Central, Ewa and Diamond Head Concourses; and a parking garage. An assessment of the capabilities of these facilities to meet present and forecast demand indicates a need for expansion (some of which is presently in progress and was covered in the 1989 EA) to continue until the year 1995. The improvements to buildings and aprons include the construction of seven new B747 aircraft hardstands and associated utilities and gate facilities airside of the PAL-1 extension of the Diamond Head Concourse (hardstands/gates 3, 2, 1A, 1B and 1C). Future construction includes two additional hardstands and associated gate facilities and utilities (hardstands/gates 1D and 1E) and the construction of two additional unnumbered hardstands Diamond Head of hardstand/gate 1E airside of "cargo city." This EIS only covers the facilities for Gates 2 and 3. The hardstand portion was covered in the 1989 HIA Master Plan EA. Additionally, the realignment and extension of Taxiway "A" and "Z" and accompanying aprons and improvements which accommodate the listed hardstands/gates are covered in this EIS.

RELOCATE HONOLULU FUEL FACILITY CORP. AND HAWAIIAN INDEPENDENT REFINERY INC. SATELLITE FUEL FACILITIES

The construction of the ITB Complex requires relocation of the existing satellite fuel facilities to a site on the east (Diamond Head) side of Lagoon Drive between the clear zones of Runways 26R and 22L. The site is adjacent to the existing fuel supply pipe right-of-way (easement) between the HIA primary fuel storage facility on Sand Island and the present satellite fuel facility on Aolele Street. New distribution pipes from the Lagoon Drive site to the airport's underground apron distribution system are required. The existing satellite fuel facilities shall be demolished and removed once the relocation of the fueling operation has been completed.

AUTOMATED PEOPLE MOVER SYSTEM AND SUPPORTING FACILITIES

With construction of the new International Terminal Building and Diamond Head Concourse Extension, it is necessary to replace the Wiki Wiki bus system with an Automated People Mover (APM) system. The APM will serve both sterile international and domestic passengers. The Wiki Wiki bus would continue to serve non-sterile domestic passengers in front of the terminals.

This project will include the design, construction and operation of an APM Maintenance Facility which will be located on newly acquired land between Aolele and Ualena Streets. Also included in this project are guideways, stations, propulsion and facilities power rooms, walkways and other support facilities.

CONSTRUCT CENTRAL CHILLER SYSTEM

At present, the passenger terminals at HIA are served by independent air conditioning facilities. As the terminals expand, and particularly with the new ITB, a central chiller system becomes desirable for flexibility, energy efficiency and economics. The central system will consist of three air conditioning chiller "anchor" plants complete with equipment, associated piping, valves and controls, and a new centralized chilled water loop system connecting the two new chiller plants with an existing chiller anchor plant. The chiller plant will supply chilled water to the Overseas Terminal, Interisland Terminal Building and the ITB. The centralized chilled water loop system will be operated and controlled through the existing Energy Monitoring and Control System.

CONSTRUCT AIRCRAFT ENGINE RUNUP PAD

An engine runup pad, large enough to accommodate a B747-400 or C5A aircraft will be constructed on approximately four acres of land. It will consist of a hardstand and stabilized taxiway shoulders located at the 26L (Diamond Head) end of the Reef Runway.

INSTALL MICROWAVE LANDING SYSTEM (MLS)

At present, HIA uses an Instrument Landing System (ILS) and a Localizer Directional Aid (LDA) as aircraft landing aids for the primary runways. These systems provide only one approach path in space which the aircraft must follow. The Microwave Landing System (MLS) will allow the air traffic controllers and aircraft landing at HIA to use the existing airspace in a more efficient and safer manner by providing multiple approach paths and precise navigational data. It may provide more flexibility in controlling aircraft noise impact on the airport environs.

ACQUIRE LAND FOR AIRPORT USE

The acquisition of 24 acres of land on Ualena Street bordering HIA is required for expansion of the airport. The planned uses include the Automated People Mover (APM) maintenance facility; airport-related services, including DOT-A offices; overseas air cargo facilities; flight kitchen facilities; and an airport base yard. This acquisition includes Ualena Street and the Chevron property, which is presently Chevron's Honolulu distribution center. The Chevron property will be used for the relocation of the Ualena Street tenants.

CONSTRUCT NEW AIR CARGO/INDUSTRIAL COMPLEX (CARGO CITY)

The proposed complex will consist of an integrated cargo/industrial structure to be built in two stages. The facility will be built on approximately 8 acres of land, which is part of the Ualena Street land acquisition. The structures will accommodate airline cargo operations at the ground level, and airport-related industrial activities, offices and ground vehicle parking on their upper levels. The entire facility will be fronted by an air cargo apron on the air side of the structures. The apron will be located makai of the existing drainage canal along Aolele Street. The canal will be bridged or modified (drainage structure) to connect the facility with the aircraft apron, thereby allowing passage of airport ground support vehicles. Aolele Street will be closed between the terminal area and Lagoon Drive. Appropriate groundside access from Ualena Street to the facility will be provided by improvements to public roadways located between Ualena Street and Nimitz Highway.

DEVELOPMENT OF KAPALAMA LANDS

The State of Hawaii will be acquiring land, presently part of Kapalama Military Reservation, from the U.S. Army and will be using this land for various State projects in the waterfront area. Within these lands, five acres will be set aside for the relocation of the Ualena Street tenants.

In addition, five acres along Sand Island Access Road will be set aside for aviation fuel storage. This five acres replaces eleven acres presently set aside on Sand Island for aviation fuel storage and is adjacent to the five acres which will be used for tenant relocation. In the event additional land is needed for fuel storage, the five acres used for tenant relocation will be available after tenant leases expire. The project will also include the installation of water, sewer and interconnecting roadways.

CONSTRUCT NEW ELECTRICAL POWER SUBSTATION AND DISTRIBUTION SYSTEMS

Extensive expansion of facilities at HIA has resulted in a greatly increased demand for electrical power. A joint program by Hawaiian Electric Company (HECO) and the DOT-A is required to satisfy the demand.

The program will require development of a plan for the total existing and planned future electrical distribution system at HIA and areas of new land acquisition. This will include analysis of electric power systems, emergency power systems, 400 HZ power systems for aircraft and maintenance facilities, raceways for HIA communications and GTE Hawaiian Telephone systems (including telephone and computer data lines). Construction will entail the installation of a new HECO 138 kV switching station in the vicinity between Kamehameha Highway and the Navy-Marine Golf Course, and a new HECO 138kV substation at Rodgers Boulevard with a 138 kV underground transmission line connecting the two stations. A new HECO distribution substation will also be installed on Lagoon Drive in the Kalewa Street industrial area. The new distribution system is designed to support the new International Terminal Building, Interisland Terminal Building, Automated People Mover System, Centralized Air Conditioning Chiller System, expansion of the Overseas Terminal and South Ramp.

ROADWAY IMPROVEMENTS AND ADDITIONAL PARKING FACILITIES

This project includes improving a portion of the airport service roads, i.e., those within the airport boundaries, that require relocation and/or realignment due to other proposed projects. Additionally, this project includes the construction of a new employee parking facility, to be located at the Aolele Street-Lagoon Drive intersection. This facility will replace the parking facility that was planned to be constructed where the new Landscaped Theme Park (see description below) will be located. Long-term roadway plans incorporate a direct connection of the frontal roadway system to the neighboring H-1 freeway. Therefore, in the future, the DOT-A will demolish the existing Aolele Street freeway on-ramps and construct a frontal roadway/freeway connection. However, this project is in its planning phase and accurate assessments of associated impacts are not available. Therefore, future studies must be completed prior to the design of this freeway connection, and a supplemental environmental document will be submitted.

LANDSCAPED THEME PARK

The Landscaped Theme Park will be located in the existing public parking lot, east (Diamond Head) of the interisland terminal. The project will establish a "green space" and park-like setting similar to the gardens located within the Central Concourse for visitors and residents to enjoy. The park will be extensively landscaped and include park benches, trash receptacles and drinking fountains as well as a theme fountain similar to that which once greeted people as they entered the airport on Rodgers Boulevard.

LEI STAND RELOCATION

The twelve existing lei stands must be relocated approximately 100 yards in a southerly (makai) direction to allow construction of the new roadway upramp. The new lei stands will have about 10,000 square feet of space as well as parking stalls for customers and more convenient access for airport users.

CONSTRUCT AIRCRAFT WASH PAD (SOUTH RAMP)

An aircraft wash pad is being planned for the South Ramp area to accommodate the stringent aircraft maintenance requirements caused by Hawaii's corrosive, salt-laden air environment. The wash pad will be large enough to accommodate B747 aircraft and will be constructed in compliance with applicable federal, State and county environmental protection rules and regulations. Studies are currently underway to determine the specific location and to establish the design criteria. If appropriate, a separate environmental assessment will be prepared for this project.

INTERISLAND TERMINAL, MAUKA PIER EXTENSION

This project will extend the present (under construction) mauka pier, of the Interisland terminal, approximately 700 feet towards Nimitz Highway. The new gates and associated hardstands will be able to accommodate "B747" size aircraft. This modification will allow for the flexible use of this terminal facility. A separate environmental assessment will be prepared for this project once adequate information becomes available.

1.4 PROPOSED GOVERNMENTAL ACTION

The State of Hawaii, Department of Transportation, Airports Division, may possibly request financial assistance from the Federal Aviation Administration, under the Airport and Airway Safety and Capacity Expansion Act of 1987, for some of or portions of some of the above listed projects. This EIS has been prepared to ensure compliance with the above noted act and to accompany applications for various government permits that may be required for development of the various projects. These may include Special Management Area (SMA) Permits, Shoreline Setback Variance and Use Permits, Conservation District Use Permits (CDUP) and Department of Health Construction and Operations permits. FAA approval of the Airport Layout Plan will also be required.

Expansion of the airport's northeast boundary into the 24-acre Ualena Street parcel will require an amendment to the City's Primary Urban Center Development Plan Land Use Map to reflect the change from Industrial to Public Facility use.

1.5 AGENCIES CONSULTED IN MAKING ASSESSMENT

Governmental agencies that have been consulted in the preparation of this EIS are the Federal Aviation Administration, State Departments of Land and Natural Resources and Health and the City and County of Honolulu Department of Public Works and Board of Water Supply.

In addition, DOT-A has consulted with the Honolulu Airline Committee, the Airport Industrial Tenants Association, HIA Technical Advisory Committee and general public regarding the development of the projects listed herein. A complete listing of the public meetings that have been held is included in Chapter VII.

1.6 BACKGROUND AND STATEMENT OF OBJECTIVES

The primary purposes of the above listed proposed actions are to provide an airport that has the appropriate facilities to serve the present and forecast aviation demands on the airport and State, and to improve the airport facilities in terms of safety and efficiency. Accomplishment of these purposes will allow aircraft and airport related operations to be conducted in the most cost effective and efficient manner, thereby benefitting the State, airport users, tenants and suppliers.

1.7 NEED FOR THE PROJECTS

The projects are required to better serve the airport users (primarily passengers) and to accommodate forecast increases in passenger and aircraft operations levels (Table I-4) at HIA. As shown in Table I-4, total passenger levels are forecast to increase from 21,449,386 in 1989 to 36,956,000 in 2010, or approximately 72 percent over the twenty-year planning period. Similarly, total aircraft operations levels are forecast to increase from 403,635 in 1989 to 566,000 in 2010, or about 40 percent during the twenty-year planning period. Similar increases in air cargo and air mail are also forecast. These increases, as well as present needs, will require that present HIA facilities be improved and expanded to meet the forecast demands, and because of the time required for planning, design and construction, these improvements need to be initiated immediately.

TABLE I-4
AVIATION DEMAND FORECASTS
HONOLULU INTERNATIONAL AIRPORT
1989-2010

ANNUAL FORECASTS	ACTUAL 1989[a]	FORECASTS 1995	2000	2005	2010
Passengers (Enplaned and Deplaned)					
Overseas - Mainland	8,675,016	10,445,000	12,103,000	13,681,000	15,321,000
- International	4,162,354	5,852,000	7,269,000	8,810,000	10,576,000
Interisland	8,612,016	9,596,000	10,143,000	10,496,000	11,059,000
TOTAL	21,449,386	25,893,000	29,515,000	32,987,000	36,956,000
Transit Passengers	1,167,954	1,000,000	1,000,000	1,000,000	1,000,000
Cargo and Mail (Enplaned and Deplaned)					
Cargo (Tons)	359,132	455,000	540,000	625,000	700,000
Mail (Tons)	41,306	45,000	50,000	55,000	60,000
TOTAL	400,168	500,000	590,000	680,000	760,000
Aircraft Operations[b]					
Air Carrier	194,347	221,500	231,000	234,000	244,000
Commuter/Air Taxi	64,348	110,000	124,000	133,000	147,000
General Aviation	100,287	110,000	115,000	125,000	130,000
Military	44,653	45,000	45,000	45,000	45,000
TOTAL	403,635	486,500	515,000	537,000	566,000
Based Aircraft	204	220	225	230	240

Notes:
[a] Data from State of Hawaii Department of Transportation
[b] FAA Air Traffic Control Tower

Source: Aries Consultants, Ltd. 1990.

2. SUMMARY OF EXISTING CONDITIONS AND POTENTIAL IMPACTS

2.1 PHYSICAL AND NATURAL ENVIRONMENT

The physical and natural environmental characteristics of HIA and environs have been fully described in several environmental documents (for example, see KFC Airport, Inc., 1989. HIA Master Plan Update & Noise Compatibility Program, Volume 3, Environmental Assessment). In general, the airport and environs are characterized as being an airport/industrial/commercial area adjacent to recreational facilities (Keehi Lagoon), Hickam Air Force Base and Pearl Harbor Naval Base. The closest residential areas are military housing serving Hickam and Pearl Harbor. The topography of HIA is relatively flat with the majority of the airport at an elevation of about +13 feet above mean sea level (MSL). The airport is constructed mostly on fill material overlying an ancient submerged coralline reef platform. Volcanic (basaltic) materials are found beneath the coralline reef platform. The present HIA site has served as the major State airport for over 50 years and consequently, the majority of the plants and wildlife inhabiting areas in and around the site are introduced species. There are no known endangered or threatened plant species found within any of the areas on which new facilities would be constructed. Keehi Lagoon is known as a resting and feeding site for the endangered Hawaiian Stilt (Himantopus mexicanus knudseni) and three bird islets were constructed in Keehi Lagoon as part of the environmental mitigation measures associated with the construction of the Reef Runway (Runway 8R-26L).

Many of the proposed projects, as listed previously, will require clearing, grubbing and grading and the construction of new facilities. In general, these activities will cause some disruption to the limited existing terrestrial biotic communities, possible short-term impacts to the marine environment adjacent to HIA and minor alterations to the physical character of the site. Based on the marine and terrestrial biological surveys that have been conducted to date, the proposed projects are not expected to result in significant short- or long-term adverse impacts to the physical or natural environment of the project sites or areas. Increased services could increase average daily sound levels in the immediate vicinity of the airport, increase automobile traffic and the air quality of the project sites and areas could be impacted. The proposed projects will also result in alterations to the present visual character of the site. To fully describe the potential noise and air quality impacts of the proposed projects, an air quality impact assessment has been conducted and information from the 1989 HIA Noise Compatibility Program is included in this EIS. Also, a traffic

impact mitigation study has been completed, but it must be revised to accommodate new information and additional traffic. Similarly, the results of terrestrial and marine surveys that have been conducted for nearby related projects are included in this EIS.

2.2 SOCIAL AND ECONOMIC ENVIRONMENT

HIA serves as the primary point of entry for both domestic and international arrivals to the State of Hawaii. The airport is served by a total of 22 domestic and international air carriers. Total aircraft operations (takeoffs and landings) in 1989 equaled 403,635. A total of 21.4 million passengers were processed through the airport in 1989; 17.2 million domestic and 4.2 million international. In addition to the passengers transiting through the airport, there are several thousand persons employed by over 100 private companies doing business in and around the airport and several hundred federal and State employees in a variety of jobs. In essence, the airport is a small city in which the population fluctuates daily and seasonally.

Economically, the airport generated about $238 million in 1989 from airport landing and user fees. At present there is an estimated $250 million worth of construction in progress, the majority of which is represented by the new interisland terminal and parking structure construction projects. The proposed actions will significantly contribute to the State's economy and the airport's ability to generate additional public and private revenues in the future.

Some of the proposed new airport facilities will require the relocation of existing businesses and facilities. To the extent possible, the social and economic characteristics and impacts of each individual proposed project, as listed previously, are discussed herein.

2.3 ARCHAEOLOGICAL/HISTORICAL/CULTURAL RESOURCES

There are no known archaeological or historical features found within the HIA areas that would be disturbed by the proposed projects. To ensure that archaeological resources are appropriately addressed, consultations with the State Historic Preservation Officer (SHPO) were conducted and the results of those consultations included in the EIS.

2.4 PUBLIC FACILITIES AND SERVICES

The proposed projects will increase demands on public facilities and services. Increased demands for and on water, sewerage, solid waste collection and disposal, and electrical and communications systems are expected to result from the proposed projects. The proposed projects have elements designed to address the expected increased public services requirements that would result from their implementation.

3. IDENTIFICATION AND SUMMARY OF MAJOR IMPACTS AND MITIGATION MEASURES

3.1 MAJOR IMPACTS

The major impacts that are expected to result from the proposed projects are increased air service capabilities for the State (allowing accommodation of forecast increases); increased economic gains to be realized from a more efficiently operating airport and from the construction and operation of the projects; and improvements to the overall quality, safety and efficiency of service that the airport will be able to provide. The proposed projects are not expected to significantly affect the physical or natural environmental characteristics of the project areas or sites. Impacts to the air quality, traffic and noise environment of the HIA area could result from the proposed projects. Similarly, major impacts to the socioeconomic character of the HIA area and private businesses serving the airport and/or general population of Oahu and the State, could result from the proposed actions. The closure of Aolele Street, accompanied by non-airport related developments, and the increase in passenger demands will create a significant impact on traffic.

3.2 MITIGATION MEASURES

The mitigation measures proposed to assure that potential adverse environmental impacts resulting from the proposed projects are minimized include adherence to federal, State and county environmental protection, health and safety and construction rules and regulations; appropriate preservation of significant archaeological/historical/cultural resources, should any be found within the HIA project areas; and appropriately designed

and located vehicular access/ingress/ egress points to minimize potential adverse air quality and traffic impacts. Similarly, tenant relocation plans and assistance would be developed in cooperation with the tenants to minimize disruptions to businesses in and around the airport.

4. SUMMARY OF ALTERNATIVES CONSIDERED

The proposed projects have been designed to meet several key objectives. In keeping with sound land use and airport planning practices and applicable EIS rules and regulations, those alternatives which could feasibly and prudently attain the objectives of the proposed projects, even though more costly, have been and will continue to be examined. The range of feasible alternatives is limited, however, to those that provide the same level and type of services that the proposed projects would, individually and cumulatively. The alternatives investigated have included different sitings of the various projects, different timing of the projects, different sizing of the various projects and the alternative of "No-Action". In general, the alternatives investigated individually and/or cumulatively would not provide the types and levels of service that the proposed projects would or would have greater potential for adverse environmental impacts.

5. SUMMARY OF UNRESOLVED ISSUES

In general, DOT-A is aware of concerns raised by the general public during on-going meetings, especially those with the Airport Industrial Tenants Association, and through public informational meetings, as well as discussions with governmental agencies regarding the proposed projects (see Chapter VII). Based on the studies conducted specifically for the projects, as well as commitments toward the community that have been made by DOT-A, e.g., relocation assistance, the projects are expected to have a long-term positive impact on the project area. Other issues that remain unresolved at this time are permitting and procedural issues that this EIS is designed to help resolve. It is believed that these issues can be resolved without undue difficulty.

Long-term developments included in this EIS which have not been thoroughly studied include the Aircraft Wash Facility, Closure of the H-1 Freeway On-Ramps from Aolele

Street, and the Interisland Terminal Mauka Pier Extension. These projects are not expected to be constructed until the 1997 to 2010 time period.

Additional traffic studies will be completed for the Closure of the Freeway On-Ramps and a supplemental environmental document will be produced.

As for the Interisland Terminal, Mauka Pier Extension, a noise study will be conducted to analyze the impacts of larger aircraft operating in the Interisland Terminal area. Either none or minor negative impacts are expected from this project in other impact categories. When the noise study is completed, an Environmental Assessment will be submitted.

If appropriate, Environmental Assessments will be submitted for the Aircraft Wash Facility and other South Ramp projects as these projects materialize and detailed information becomes available.

6. SUMMARY OF COMPATIBILITY OF LAND USE POLICIES AND CONTROLS

The proposed projects would be located within the present State Land Use Commission (SLUC) designated Urban District as well as the City and County of Honolulu Development Plan and Public Facilities Plan designated Airport Area. All projects are consistent with existing land use policies and controls. HIA is within the City and County of Honolulu designated Special Management Area (SMA), as defined under the Coastal Zone Management Act. As such, SMA permits will be required for the projects as will a coastal zone consistency determination. Applications for these actions will be filed as part of the projects' planning and design efforts. Chapter V describes and discusses the projects' relationship to State and City and County land use plans, policies and controls and Table I-5 identifies the projects' compliance with applicable federal, State and county environmental protection regulations.

TABLE 1-5

COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES

ENVIRONMENTAL LAWS	STATUS	COMMENTS
FEDERAL LAWS:		
CERCLA (Super Fund)	To be in Compliance	Appropriate real estate and structure audits to be conducted prior to construction
Clean Air Act	In Compliance	EIS to be reviewed by EPA and State DOH
Clean Water Act	In Compliance	EIS to be reviewed by State DOH
Coastal Zone Management Act	In Compliance	Consistency Determination to be submitted to Office of State Planning for concurrence
Endangered Species Act	To be in Compliance	US F&WS to review EIS
Estuary Protection Act	Not Applicable	
Executive Order 11988 Flood Plains	In Compliance	Habitable structures to be constructed above flood hazard height
Executive Order 12088 Federal Compliance with Pollution Control Standards	In Compliance	
Executive Order 12372 Comments Review of Federal Programs	In Compliance	Draft EIS processed through Area-wide Clearinghouse. Responses to Clearinghouse comments included in Final EIS

TABLE I-5

COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES
(Continued)

ENVIRONMENTAL LAWS	STATUS	COMMENTS
FEDERAL LAWS (Con't)		
Federal Water Project Recreation Act	Not Applicable	
Fish and Wildlife Coordination Act	In Compliance	EIS to be reviewed by US F&WS and NMFS
Land and Water Conservation	Not Applicable	
Marine Protection, Research and Sanctuaries Act	Not Applicable	
National Environmental Policy Act	In Compliance	EIS to be filed with EPA
National Historic Preservation Act	To be in Compliance	Consultations with State Historic Preservation Office to be conducted
Noise Control Act	In Compliance	See Chapter IV
Resource Conservation and Recovery Act	In Compliance	See Chapter IV
River and Harbor Act of 1899	Not Applicable	
Safe Drinking Water Act	In Compliance	No Effect
Solid Waste Disposal Act	In Compliance	See Chapter IV
Toxic Substance Control Act	In Compliance	
Watershed Protection and Flood Protection Act	Not Applicable	
Wild and Scenic Rivers Act	Not Applicable	

TABLE I-5

COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES
(Continued)

ENVIRONMENTAL LAWS	STATUS	COMMENTS
STATE LAWS:		
Chapter 343 HRS	In Compliance	EIS to be processed through the State Office of Environmental Quality Control
DOH Chapter 200	In Compliance	EIS contains all informational requirements and will be reviewed per Chapter 200
Chapter 205-A Coastal Zone Management Act	In Compliance	CZM Consistency to be requested from OSP
Conservation District Use	To be in Compliance	CDUA to be submitted following approval/ acceptance of this EIS
Chapter 205 HRS	In Compliance	
Chapter 226 HRS Hawaii State Plan and Functional Plans	In Compliance	
COUNTY LAWS:		
Special Management Area	To be in Compliance	SMA Permit Application to be filed with City and County of Honolulu
Environmental Protection Rules and Regulations	To be in Compliance	Construction contract documents to require compliance with all applicable county rules and regulations

7. COMPLIANCE WITH FAA ORDER 5050.4A

This Environmental Impact Statement has been written to comply with both FAA Order 5050.4A, Airport Environmental Handbook, and the Hawaii Revised Statutes, Chapter 343. Due to the requirement of HRS Chapter 343 for an Environmental Impact Statement, the format of this statement follows those guidelines. This section is included for those reviewers who need the information as required under FAA Order 5050.4A, "Airport Environmental Handbook."

7.1 NOISE

The aviation noise impacts are discussed in Chapter IV, Section 6.3. It basically refers to the recent FAR Part 150 Noise Compatibility Program by Edward K. Noda and Associates, 1989, which is in the approval process.

7.2 LAND USE

The land use policies and controls are discussed in Chapter I, Section 6. Also, Chapter V discuss the relationship of the projects to the Land Use policies of the area.

7.3 SOCIAL IMPACTS

The social impacts are briefly discussed in Chapter I, Section 2.2, and in detail in Chapter IV, Section 5. The major impacts will be the acquisition of the Ualena Street properties, and the relocation of airport tenants for the International Terminal Building Complex.

7.4 INDUCED SOCIOECONOMIC IMPACTS

As in social impacts the induced socioeconomic impacts are addressed in Chapter I, Section 2.2 and Chapter IV, Section 5.

7.5 AIR QUALITY

The air quality is discussed in Chapter IV, Section 6.2. Briefly, there will be "hotspots" occurring at certain locations with the airport boundary, i.e., curb side, congested intersection, etc. In general, the air quality is within federal and State of Hawaii limits. Also, the proposed projects will not induce increased emission from aircraft, since the projects are to meet forecast demands.

7.6 WATER QUALITY

The groundwater, hydrology and surface water quality are discussed in Chapter IV, Section 2.2. The water quality is discussed in Chapter IV, Section 3.2. There is a potential of impacting the neighboring water bodies for several projects, i.e., Satellite Fuel Farm, hydrocarbon remediation, Cargo City, etc. Proposed mitigation measures are listed in the appropriate sections.

7.7 DEPARTMENT OF TRANSPORTATION ACT, SECTION 4(f)

No impacts are anticipated on Keehi Lagoon Park or any other public lands in the area, and therefore this section is not applicable.

7.8 HISTORIC, ARCHITECTURAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

There are no known historic, architectural, archaeological or cultural resources directly impacted by any of the projects. However, aircraft noise does impact several structures in this classification and is discussed in Noise Impacts, Chapter IV, Section 4. The impact is not significant.

7.9 BIOTIC COMMUNITIES

The impacts to terrestrial biota are described in Chapter IV, Section 3.1 and the impacts on the marine biota are described in Section 3.2.

7.10 ENDANGERED AND THREATENED SPECIES OF FLORA AND FAUNA

The impacts on the endangered and threatened flora and fauna are discussed in Chapter IV, Section 3.

7.11 WETLANDS

There are no known wetlands within the airport boundary and, therefore, this section is not applicable.

7.12 FLOOD PLAINS

The flood plains and tsunami runup zones are described in Chapter IV, Section 2.3, "Natural Hazards." No significant impacts are likely to occur.

7.13 COASTAL ZONE MANAGEMENT PROGRAM

The State of Hawaii Coastal Zone Management Act is discussed in Chapter V, Section 1.3. All applicable rules and regulations will be followed by the Department of Transportation, Airports Division.

7.14 COASTAL BARRIERS

This section is not applicable due to Hawaii's location in the middle of the Pacific Ocean.

7.15 WILD AND SCENIC RIVERS

There are no wild and scenic rivers within the project area and, therefore, as stated in Table I-5, this section is not applicable.

7.16 FARMLAND

There is no farmland within the project area and, therefore, this section is not applicable.

7.17 ENERGY SUPPLY AND NATURAL RESOURCES

Electrical needs and impacts are discussed in Chapter IV, Section 6.7 and in Appendix B. The use of natural resources is discussed in Chapter VI, Section 2.

7.18 LIGHT EMISSIONS

Light inputs are discussed in Chapter IV, Section 2.4.2. No high intensity lighting is to be employed in any of the new facilities, nor are any residences exposed to increased light emissions. No significant impacts would result.

7.19 SOLID WASTE IMPACTS

The impacts for solid waste are found in Chapter IV, Section 6.6 and in Appendix B.

7.20 CONSTRUCTION IMPACTS

The construction impacts for the various projects are discussed in the various Sections in Chapter IV. For example, the noise impacts during construction are described in Noise

Quality and, similarly, fugitive dust emissions are discussed in the Air Quality Section. The issues such as short-term impacts and irreversible and irretrievable resources are discussed in Chapter VI, Sections 1 and 2.

8. LIST OF PREPARERS OF THIS EIS

NAME/AFFILIATION	TITLE	AREA OF EXPERTISE
Edward K. Noda/E.K. Noda & Associates	Principal	Project Management
James G. Dittmar/E.K. Noda & Associates	Principal	Project Director
William R. Buevens/E.K. Noda & Associates	Airport Planner	Airport Planning
Gregory C. Goetz/E.K. Noda & Associates	Airport Architect/Planner	Airport Design/Planning
Brian Ishii/E.K. Noda & Associates	Airport Planner	EIS Coordination
Gordon A. Chapman/ Chapman Consulting Services	Owner/Environmental Analyst	EIS Preparation/Principal Author
George Krasnick/ GK & Associates	Owner/Environmental Analyst	EIS Editor
Brian Bowers/KFC Airport, Inc.	Project Manager	Interisland Terminal Projects Project Manager
Michael Miura/Wilson Okamoto & Associates	Program Manager	South Ramp Projects Manager
Alvin Chong/Pacific Planning & Engineering	Program Manager	Intra-airport Transportation System Project Manager
Roy Mikami/Park Engineering	Program Manager	International Terminal Building Project Manager
Alan Hirota/M & E Pacific	Project Manager	Overseas Terminal Projects Project Manager

CHAPTER II

DESCRIPTION OF THE PROPOSED PROJECTS

1. REGIONAL SETTING

Honolulu International Airport is a joint-owned, joint-use, military/civilian airport located on approximately 4,500 acres of land four miles northwest of the central business district of Honolulu and about eight miles from the Waikiki Beach tourist destination area. The airport is the hub of the air transportation system for the State. All international flights and a majority of the mainland domestic flights to and from Hawaii pass through HIA, as do most interisland flights. The primary land uses in the immediate vicinity of HIA include aviation related commercial/industrial activities, military activities and general business activities. Military residential and recreational facilities are also located within the airport environs.

HIA is part of a statewide system that includes thirteen airports. It is the hub of air transportation for the State as well as the entire Pacific basin. In 1989, over 21.4 million passengers passed through the airport and 403,635 aircraft operations were recorded at HIA. The airport presently includes a main terminal building (Overseas Terminal) housing both domestic and international arrivals; two separate interisland terminals that will be replaced by a new interisland terminal now under construction; four major runways (8L-26R, 8R-26L, 4L-22R and 4R-22L) and connecting taxiways; and several air cargo, aircraft maintenance and aircraft fueling facilities as well as other airport related servicing facilities (Figure II-1). The present airport lands are owned by the State of Hawaii and are classified Urban by the State Land Use Commission. Additionally, the airport area is zoned Light Industrial and designated Public/ Military Facilities on the City and County of Honolulu Development and Public Facilities Maps. The parcels on which the project would be developed are identified as Tax Map Keys (TMK's) 1-1-01; 1-1-02; 1-1-03; 1-1-04; 1-1-05; 1-1-14; 1-1-15; 1-1-16; and 1-1-70.

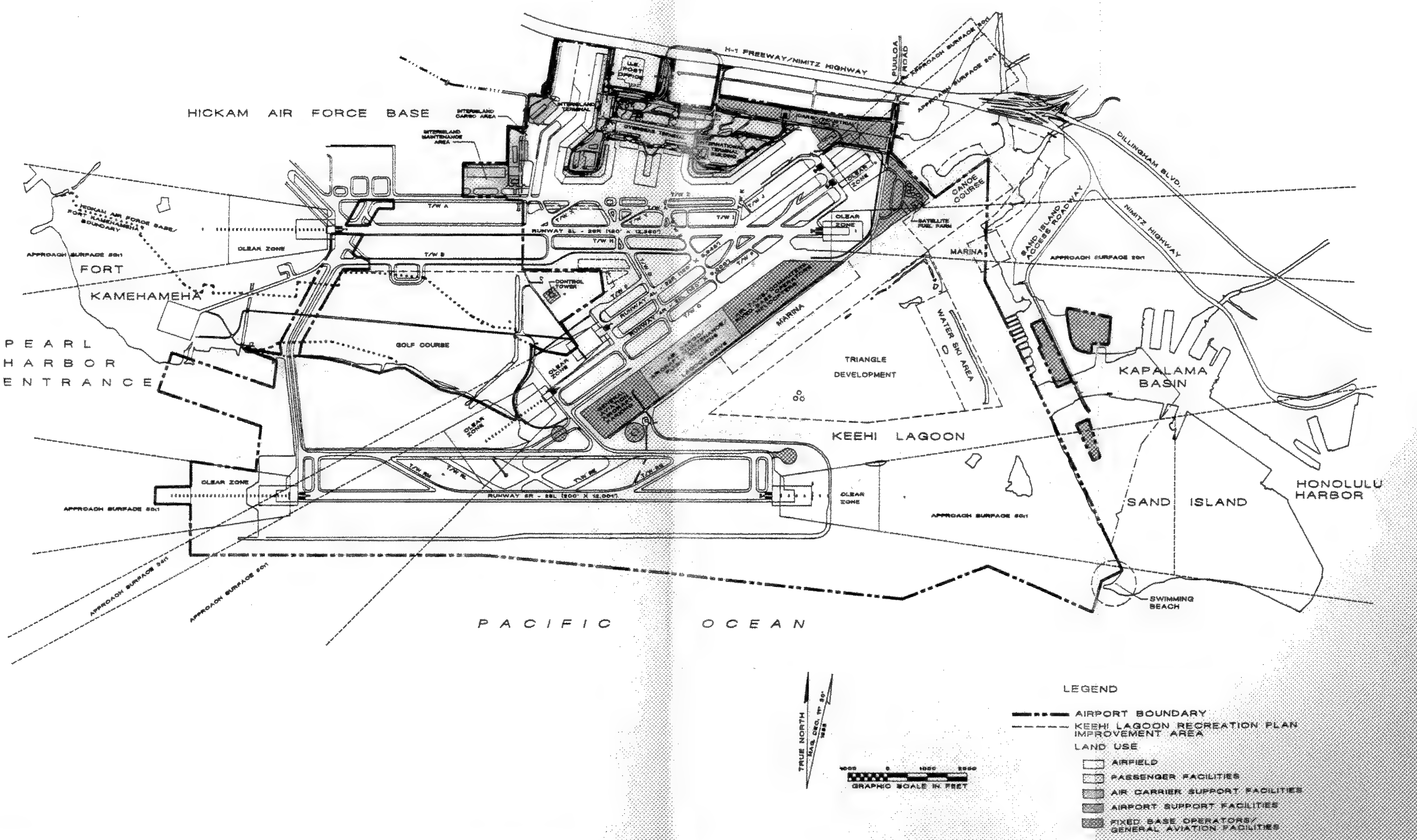
1.1 KEEHI LAGOON DEVELOPMENT

Since the majority of Keehi Lagoon lies within the boundary of Honolulu International Airport, planned development within the Lagoon is considered an Airport land use issue.

The information for the Keehi Lagoon development was obtained from the "Keehi Lagoon Recreation Plan Update" (Noda and Dashiell, 1987) and the "Keehi Lagoon Recreation Plan, Final Environmental Impact Statement" (Noda and Associates, 1989). The proposed recreational plan is an update of the "Keehi Lagoon Recreation Plan" (Aotani and Associates, 1977), and was prepared for the State of Hawaii, Department of Transportation, Harbors Division. The proposed Keehi Lagoon development includes a Hawaiian Canoe Center, the Pier 60 marina and Lagoon Drive marinas, a development on the Keehi triangle, and a sheltered swimming beach. The triangular area in the center of the Lagoon is planned to accommodate recreational, industrial, commercial and marine-related activities, and is connected to Lagoon Drive by a bridge. Figure II-2 presents the proposed development within the Lagoon, and was extracted from the "Keehi Lagoon Recreational Plan, Final Environmental Impact Statement".

The Keehi Lagoon Recreational Plan EIS was prepared in December 1989, approved by the Director of Transportation in January 1990, and accepted by the Governor in April 1990. Therefore, the proposed elements of the plan are included in this Environmental Impact Statement for informational purposes only and will not be re-analyzed for environmental impacts. However, to determine the overall impact of the HIA development, Keehi Lagoon forecasts and mitigation measures are included in the existing baseline conditions.

It should be noted that much of the proposed development is planned to be accomplished by private funding through lease agreements with the State. Therefore, the proposed development plan in Figure II-2 is conceptual in scope and represents maximum probable development of the central lagoon area. Actual development may be reduced in scope and/or with phased development over long time periods.



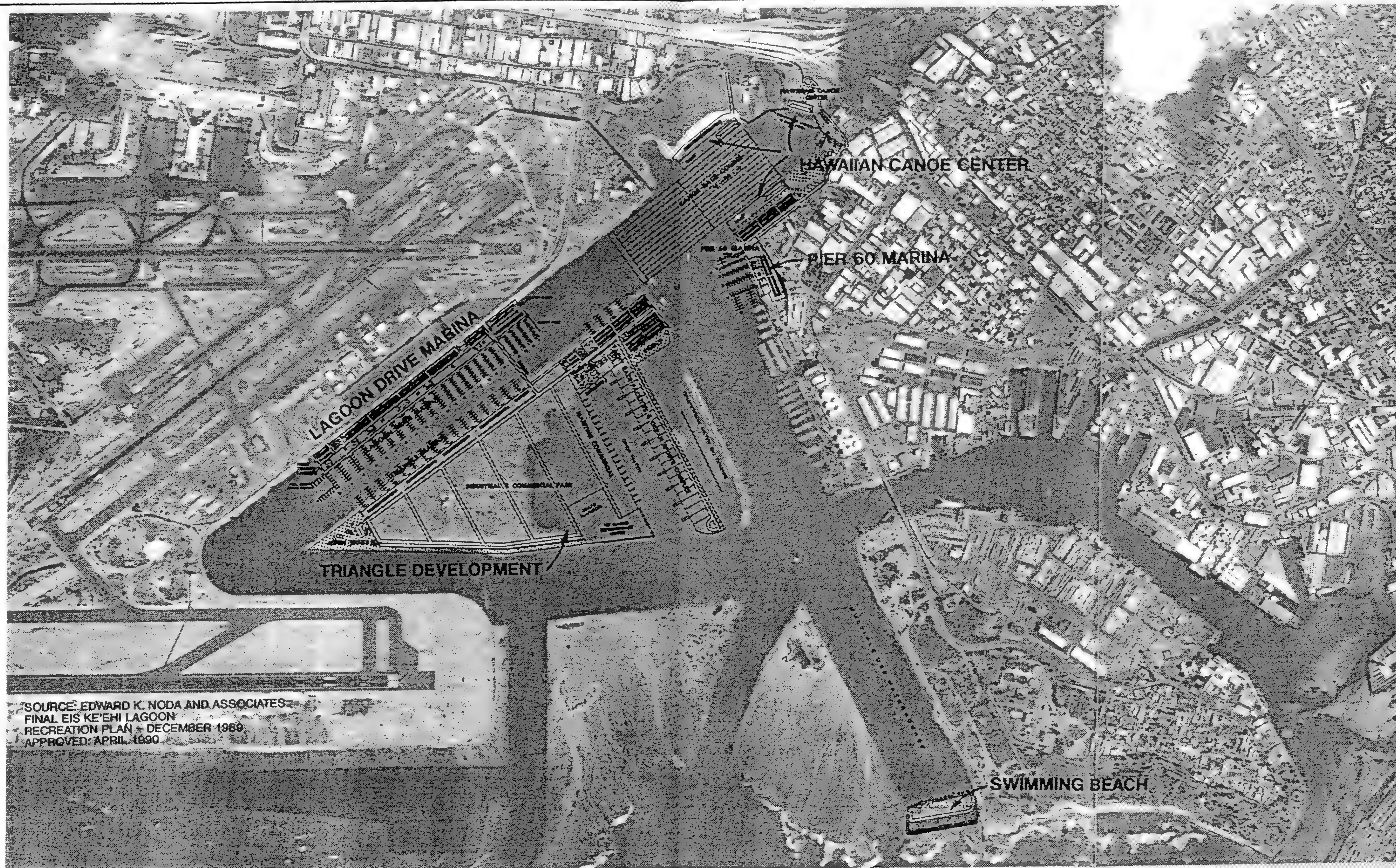
AIRPORTS DIVISION
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HONOLULU INTERNATIONAL AIRPORT
ENVIRONMENTAL
IMPACT STATEMENT

Edward K. Noda
and
Associates, Inc.

DEVELOPMENT PLAN

FIGURE
II-1



AIRPORTS DIVISION DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT	Edward K. Noda and Associates, Inc.	KE'EHI LAGOON RECREATION PLAN	FIGURE II-2

2. PROJECT BACKGROUND

2.1 BACKGROUND AND STATEMENT OF OBJECTIVES

This EIS is a continuation of the environmental impact documentation that has been prepared for previous projects at HIA and adds to previously prepared environmental impact statements and environmental assessments (EA's), including the 1989 EA referenced in Chapter VIII.

The primary purposes of the above listed proposed actions are to provide an airport that has the appropriate facilities to serve the present and forecast aviation demands on the airport and State, and to improve the airport facilities in terms of safety and efficiency. Accomplishment of these purposes will allow aircraft and airport related operations to be conducted in the most cost effective and efficient manner, thereby benefitting the State, airport users, tenants and suppliers.

2.2 DETAILED DESCRIPTION OF PROJECTS

The preferred alternatives for the proposed projects (Figures II-3 and II-4) are listed below. Master planning and preliminary engineering work are underway for some of them. The projects listed below will be developed over a twenty-year period (1990 - 2010) as aircraft, passenger and air cargo levels increase and the demand for the new facilities increases. The potential environmental impacts of these preferred alternatives for the proposed projects are described in Chapter IV of this EIS.

<u>INTERNATIONAL TERMINAL BUILDING COMPLEX</u>

The International Terminal Building Complex (ITB) project is located in the Diamond Head Service Court of the Overseas Terminal at Honolulu International Airport (HIA); it will occupy an area of approximately 43 acres. In order to construct Program Activity Level-1 (PAL-1) of the ITB, it will be necessary to relocate present tenants of the Diamond Head Service Court and adjacent areas. The tenants to be relocated are listed as follows.

LEGEND

1- CONSTRUCT HAZARDOUS CARGO HARDSTAND / TAXIWAY RS

7- CONSTRUCT NEW SATELLITE FUELING FACILITY

8- SOUTH RAMP DEVELOPMENT

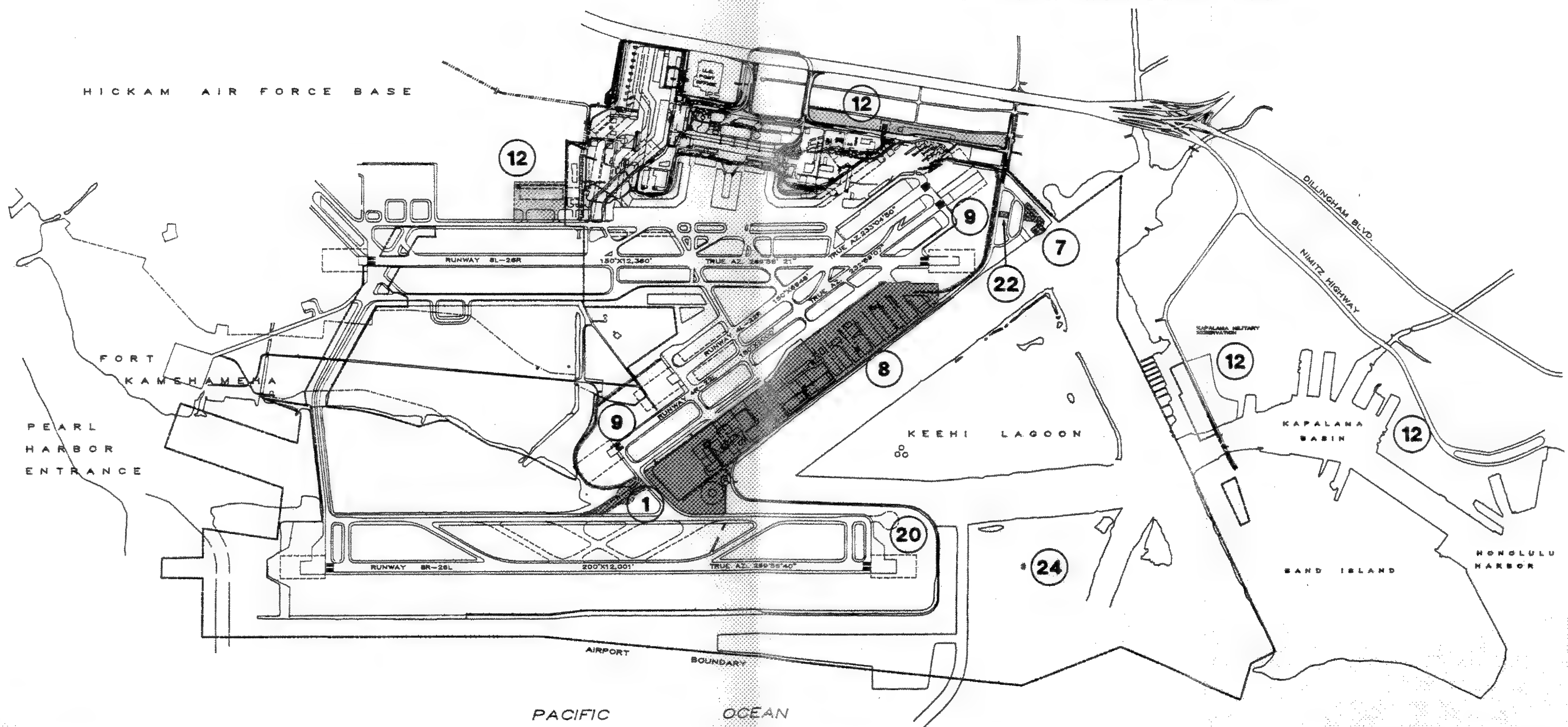
9- CONSTRUCT PERIMETER ROADS

12- PROPERTY ACQUISITION

20- CONSTRUCT INTERIM AIRCRAFT RUNUP PAD / FACILITY

22- CONSTRUCT NEW ELECTRICAL SUBSTATION/ DISTRIBUTION SYSTEM

24- INSTALL MICROWAVE LANDING SYSTEM



AIRPORTS DIVISION
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT

Edward K. Noda and Associates, Inc.

PROPOSED PROJECT LOCATIONS

FIGURE II-3

LEGEND

2- IMPROVE/EXPAND OVERSEAS TERMINAL AND APRON

3- MODIFY CENTRAL CONCOURSE GATES

4- CONSTRUCT NEW INTERISLAND TERMINAL AND APRON

5- CONSTRUCT NORTH RAMP COMMUTER FACILITY

6- CONSTRUCT INTERNATIONAL TERMINAL COMPLEX

A. INTERNATIONAL TERMINAL BUILDING

B. DIAMONDHEAD CONCOURSE EXTENSION AND APRON

C. APM MAINTENANCE FACILITY

D. CARGO CITY

9- CONSTRUCT PERIMETER ROAD

10- INSTALL AUTOMATED PEOPLE MOVER SYSTEM (APM)

11- EXPAND/UPGRADE BASE MAINTENANCE FACILITY

12- PROPERTY ACQUISITION

13- RELOCATE NORTH RAMP ARFF STATION

14- CONSTRUCT AIRPORT HOTEL/PARKING STRUCTURE

15- ROADWAY IMPROVEMENTS/ADDITIONAL PARKING FACILITIES

16- CONSTRUCT LINK TO C&C HONOLULU RAPID TRANSIT SYSTEM

17- CONSTRUCT NEW INTERISLAND AIRCRAFT MAINTENANCE/CARGO FACILITIES

18- CONSTRUCT EMPLOYEE/LONG TERM PARKING FACILITY

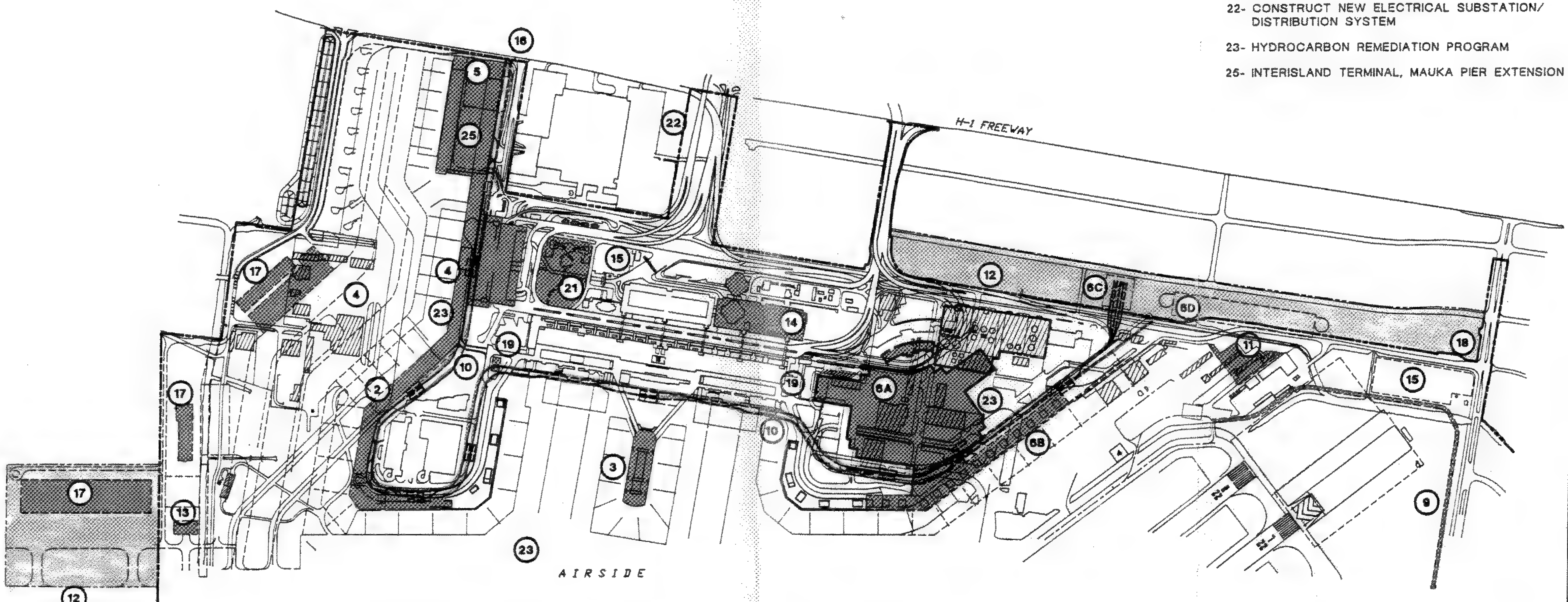
19- CONSTRUCT CENTRAL CHILLER PLANTS AND DISTRIBUTION SYSTEM

21- CONSTRUCT LANDSCAPED THEME PARK/ RELOCATE LEI STANDS

22- CONSTRUCT NEW ELECTRICAL SUBSTATION/ DISTRIBUTION SYSTEM

23- HYDROCARBON REMEDIATION PROGRAM

25- INTERISLAND TERMINAL, MAUKA PIER EXTENSION



AIRPORTS DIVISION
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT

Edward K. Noda and Associates, Inc.

PROPOSED PROJECT LOCATIONS TERMINAL AREA

FIGURE II-4

Tenant	DOT-A Building No.
Marriott Flight Kitchen	Building 108
Wiki-Wiki Maintenance	Building 120
Lockheed Air Terminal	Buildings 102 and 104
Satellite Fuel Facility	Honolulu Fuel Facility Corp.
United Airlines	
Flight Kitchen	Building 114
Ground Equipment Dept.	Building 112
In-Flight Emergency Training	Building 112
Stores	Building 112
Paint Shop	Building 109
Aircraft Maintenance	Building 112
Administration	Building 112
Cargo	Building 115
Northwest Cargo	Building 132
Delta Ground Vehicle Maintenance	Building 121
Continental Airlines Maintenance Facility	Building 113
Commuter Terminal	
Aloha Island Air	Building 345
Circle Rainbow Air	Building 345
North Ramp Tenants	
Tie Downs	N/A
Wittinghill dba Polynesian Air	Building 106
Hawaii Pacific Helicopter	Building 103
Great Bend Air	Building 105
Cherry Helicopters	N/A
Hutchinson Air	Building 103
Papillon Helicopters	Building 103
Care All Aviation	Building 123

Tenants will be relocated to sites within the existing HIA boundary and on new land to be acquired by the Department of Transportation, Airports Division, north (mauka) of the existing HIA boundary between Aolele and Ualena Streets (Ualena Airport Subdivision) (see Acquire Land for Airport Use project description below), to the Kapalama Lands to be developed as part of the overall State of Hawaii waterfront development program or to other suitable light industrial areas. All tenant relocations will be conducted in compliance with applicable state and federal relocation assistance rules and regulations.

Once tenants have been relocated, the ITB complex will be constructed on the cleared Diamond Head Service Court site. The total project is comprised of the

International Terminal Building, the Diamond Head Concourse Extension (DHCE), and Site Facilities which consist of: an access and frontal roadway system, public parking, ground transportation and ancillary facilities, site service roads and site utility systems.

The International Terminal Building is a four level, chevron shaped building of approximately 1,650,000 square feet having the following functions and facilities at each level:

Basement:	Airline handling of international baggage; building mechanical systems; building supply and support; tenant supply and support; and airline offices.
Ground Level:	Federal Inspection Services (FIS) inspection; FIS offices and support; airline baggage recheck; international tour group baggage check-in; tour group operator offices; car rental and hotel check-in services; and deplaning passenger services and amenities.
Second Level:	International passenger check-in and ticketing; international airline offices and support; concessions and passenger services; FIS offices; secure connector to concourse; and passenger services and amenities.
Third Level:	Airline VIP clubrooms and offices, automated people mover stations, and secure connector to the concourse for deplaning international passengers.

The Diamond Head Concourse Extension extends the existing concourse past existing Gate 6 to accommodate seven more gates in Program Activity Level-1 (PAL-1) and a total of nine gates by PAL-2. (PAL-1 represents a 100% increase in annual international passenger volumes over the 1988 levels, and may be expected to occur in the 2000-2005 time period. PAL-2 represents a 120% increase in annual international passenger volumes over the 1988 levels, and may be expected to occur in the 2000-2020 time period.(KPMG Peat Marwick, 1989)) The gates specifically covered in this EIS are Gates 3, 2, 1A, 1B, 1C, 1D, and 1E. The DHCE has three levels having the following functional uses.

Grade Level:	Airline operations and support and FIS support.

Second Level:	Aircraft boarding and deplaning; secure separation of international arrivals; passenger circulation; passenger services and amenities; concessions; and airline and other tenant offices.
Third Level:	International arrivals circulation; Automated People Mover system stations, international arrivals circulation; and in-transit international passenger lounges.

The ITB and DHCE together will include approximately 1.7 million square feet of floorspace in PAL-1 and an additional half million square feet of floorspace in PAL-2 for a total of approximately 2.2 million square feet. Site facilities include a two level roadway system having four lanes each. Public parking is provided for approximately 530 vehicles in PAL-1 and 730 vehicles (total) in PAL-2. Ground transportation and ancillary facilities include bus, van, taxi, limo and baggage truck parking areas, a tour group arrival baggage facility and a tour group assembly area. Site utility systems include water (potable and non-potable), sewerage, drainage, electrical, communication and natural gas.

Construction Cost Estimate:

• Tenant Relocation	18.4 Million 1990 Dollars
• ITB Facility Planning Level - PAL-1	676 Million 1991 Dollars
• ITB PAL-2	To Be Determined

Development Schedule:

• Tenant Relocation	1990-1995 Time Period
• ITB PAL-1	1990-1995 Time Period
• ITB PAL-2	2000-2010 Time Period

EXPANSION OF OVERSEAS TERMINAL HARDSTANDS/GATES, DIAMOND HEAD CONCOURSE (GATES 3, 2, 1A, 1B, 1C, 1D, 1E AND 2 UNNUMBERED HARDSTANDS)

The Overseas Passenger Terminal at HIA consists of aircraft parking positions; a terminal building; Central, Ewa and Diamond Head Concourses; and a parking garage. An assessment of the capability of these facilities to meet present and forecast demand indicates a need for expansion (some of which is presently in progress and was covered in the 1989 EA) to continue until the year 1995. The improvements to buildings and aprons include the construction of five new B747 aircraft hardstands, with associated utilities and gate facilities,

airside of the PAL-1 extension phase of the Diamond Head Concourse (hardstands/gates 3, 2, 1A, 1B and 1C). Future construction includes two additional hardstands and associated gate facilities and utilities (hardstands/gates 1D and 1E) and the construction of two additional unnumbered hardstands Diamond Head of hardstand/gate 1E, airside of "cargo city." Hardstands/Gates 1A, 1B, 1C, 1D, 1E and the two undesignated Diamond Head hardstands are covered under this EIS as are the gate facilities for Hardstand/Gates 2 and 3. Additionally, the necessary realignment and extension of taxiways "A" and "Z" and accompanying aprons and improvements to accommodate the listed hardstands/gates are covered in this EIS.

Construction Cost Estimate: To Be Determined

Development Schedule: 1990-1995 Time Period

RELOCATE HONOLULU FUEL FACILITY CORP. AND HAWAIIAN INDEPENDENT REFINERY INC. SATELLITE FUEL FACILITIES

The Hawaiian Independent Refinery, Inc. (HIRI) and the Honolulu Fuel Facility Corporation (HFFC) (Buildings 118 and 119 and fuel tanks) satellite aircraft fuel storage facilities for the Honolulu International Airport are presently located in the Diamond Head Service Court of the Overseas Terminal, fronting Aolele Street (makai side) and abutting the west (Ewa) end of the existing Delta airline cargo facility. These facilities contain bulk storage tanks having a capacity of approximately 263,000 barrels of aviation fuel, pumping facilities for the underground distribution system, and fuel truck filling stations.

The construction of the ITB Complex requires relocation of the existing satellite fuel facilities to an approximately 9.3 acre site on the east (Diamond Head) side of Lagoon Drive between the clear zones of Runways 26R and 22L. This site is adjacent to the existing fuel supply pipe right-of-way (easement) between the HIA primary fuel storage facility on Sand Island and the present satellite fuel facility on Aolele Street. New distribution pipes from the Lagoon Drive site to the airport underground apron distribution system are required. Existing and proposed pipelines would be located within an existing "State Energy Corridor."

The Facility will specifically include operating storage tanks for 400,000 barrels (bbls) of jet fuel, supply pipelines from the existing underground supply system, fuel filtration system, metering, piping to and from tanks to multiple pumps, valves, truck loading and unloading stations, controls and monitoring equipment. The planned capacity will provide the airport with three days' supply of fuel in the event of a disruption of service from the bulk fuel storage system on Sand Island.

The Project includes provisions for containment of fuel (see Figure IV-1), processing of spilled or drained fuel, and processing of drained water and storm water runoff. There will also be a self-contained foam generating fire protection system covering all tanks and fuel equipment. Emergency power generators will be installed with capacity for minimal operations. There will also be various support buildings that provide for offices, showers, toilets, Operations Control, Maintenance, Warehousing, Electrical Controls, Emergency Generators and Foam Fire Control equipment.

The site is presently occupied by a number of structures and facilities in aviation support related activities. The site is improved with hardscape and asphaltic concrete pavement, with connection to existing drainage and utility lines.

It is vital to maintain a facility on airport property which will provide an expanded storage capacity to meet the increasing demand of fuel requirements by projected aircraft arrivals and departures. A second consideration is the opportunity to upgrade the fueling facility in terms of environmental and fire safety. Finally, the replacement will be consistent with the design and construction of the proposed International Terminal Building (ITB) which is planned to be built where the existing fueling facility is located. The existing satellite fuel facilities will be demolished and removed once the relocation of the fueling operation has been completed.

Construction Cost Estimate: 47 Million 1991 Dollars

Development Schedule: 1996-2010 Time Period

AUTOMATED PEOPLE MOVER SYSTEM AND SUPPORTING FACILITIES

At present, a (Wiki-Wiki) bus system transports passengers between and within the Overseas and Interisland passenger terminals at HIA. With construction of the new International Terminal Building Complex and Diamond Head Concourse Extension, it is necessary to replace the bus system with an Automated People Mover (APM) system. The APM will serve both international and domestic passengers.

The APM is designed to provide safe, reliable and high quality service. It will feature proven, state-of-the-art transit technology using computer controls for vehicle operations; the vehicles will not have drivers or attendants on board. Trains will consist of up to four vehicles with each vehicle carrying 85 persons.

The APM system will be constructed and made operational in four phases:

- Phase 1 - Provide international and/or domestic service between the Ewa, Central and Diamond Head Concourses, and the International Terminal Building.
- Phase 2 - Extend service along the Ewa Concourse to the Interisland Terminal.
- Phase 3 - Extend service along the Diamond Head Concourse.
- Phase 4 - Extend service from the Interisland Terminal to the proposed Honolulu Rapid Transit station.

The APM will serve all three passenger terminals (Overseas, Interisland and International) by operating on tracked guideways at the third level of the buildings. The terminal will also be retrofitted/provided with APM passenger stations. In addition to the guideways and passenger stations, the system will have a maintenance facility located on newly acquired land between Aolele and Ualena Streets.

The maintenance facility will be a multi-storied structure with the APM maintenance area located on the top level. The height of the structure will be governed by the right-of-way of the tracks crossing Aolele Street. The APM maintenance floor will accommodate repair and maintenance areas; equipment, supply and storage; administrative and central control offices; vehicle wash areas; and other necessities for the operation. Groundside access to the facility will be from Aolele and/or Ualena Streets.

Some concerns have been expressed concerning the safety and security of people using the APM system. Significant efforts have been made in these areas, as expressed in the below excerpts from the "Special Provisions" section of the Request for Proposals documents for this project.

As part of the System Safety and Security Program, the State will establish an APM Safety and Security Committee (SSC). This SSC will include representatives of the Airport operations and emergency services, the State, and the Contractor. This SSC will consider overall safety and security policy issues, review the Contractor's Safety and Security Program, and develop coordinated Airport-System procedures and responses to operations and emergency activities. The Contractor's Safety and Security Program Plan shall include providing information to and meeting with the SSC.

> *"Throughout the design and implementation, the Contractor shall follow a Contractor-prepared Safety and Security Program Plan that shall stress early hazard identification and elimination or control. The Contractor shall submit its Safety and Security Program Plan for the State's review within six (6) months after NTP. Essential aspects of the Safety and Security Program to be addressed in the Safety and Security Program Plan are as follows:*
>
> *A. Safety Coordinator. The Contractor shall designate a single individual as Safety Coordinator. This individual shall have single point responsibility for all safety issues and shall interface with the State's representatives on issues related to accidents and injuries, fire safety, site safety, and all other safety matters.*
>
> *B. Design Safety Confirmation. The Contractor shall provide confirmation that all safety-critical subsystems have been designed using the fail-safe and/or checked redundant principles. Subsystems such as emergency braking, switching, automatic train protection and various other safety interlocks shall require such confirmation. This confirmation shall be established by submitting evidence that an independent safety review has been conducted to establish conformance to fail-safe or checked redundant principles. The independent review may be performed either by an outside*

agency or an agency within a different profit center of the Contractor's organization. The evidence submitted may consist of the actual review or a letter from the reviewing agency stating that the design is in accordance with these principles and summarizing substantiating evidence.

C. *<u>Operational Safety Procedures</u>. The Safety Coordinator, working closely with the State, shall develop operational procedures to deal with accidents, passenger injury, fire, emergency evacuation, vehicle retrieval, bomb or terrorist threats, passenger on the guideway, maintenance personnel safety, and other safety issues requiring standard operating procedures. The Contractor shall prepare operational safety Procedures which documents proper procedures for these situations. These Procedures shall be reviewed by the SSC and used to ensure that the System design can accommodate necessary operational, emergency, and failure management responses. Once accepted by the SSC, these procedures shall be incorporated in the "Manual of Operating Procedures" and instruction as to their use shall be provided to State personnel in accordance with requirements of the Training Program.*

D. *<u>Definition of Catastrophic/Critical Hazards</u>. Catastrophic (Category I) and critical (Category II) hazards shall be defined as per MIL-STD-882B.*

E. *<u>Hazards Identification and Analysis</u>. The Contractor shall carry out the following:*

1. *Conduct a preliminary hazards analysis to identify hazards associated with the System and present the findings in a document entitled Preliminary Hazards Analysis (PHA) within six (6) months after NTP.*

2. *Perform subsystem, System, and operating and support (O&S) detailed hazards analyses and present the findings*

in a document entitled Detailed Hazards Analysis (DHA) to be submitted within thirty (30) days after the final subsystem design review. Individual detailed hazards analyses shall be documented/discussed as part of associated subsystem design reviews. Analyses may be limited to Categories I and II hazards identified by the PHA. Qualitative analyses shall be conducted for the express purpose of identifying unresolved hazards, establishing causes of failure and providing priorities for subsequent action. Applicable analyses conducted for previous people mover installations using the same equipment will be acceptable where it can be shown that no changes have been made which affect safety.

3. *The Contractor shall comply with all requirements of the Hazardous Communication Standard, OSHA Standard 1910.1200.*

F. *Safety Document Files. The Contractor shall maintain a complete set of safety files with all documents required by or supporting the requirements of this Section. These files shall be provided to the State as a condition to issuance of the Certificate of Final Acceptance.*

G. *System Security. The APM system shall be designed to minimize, to the maximum extent possible, the occurrence of personal injury, property damage and loss, and service disruptions resulting from acts of crime or vandalism.*

All guideway and other wayside equipment supplied by the Contractor not otherwise locked and protected shall be protected by tamper-resistant covers and through use of tamper-resistant fasteners. All electrical connections shall be enclosed in vandal-resistant enclosures.

Power supply, telephone communications, CCTV and electronic security lines entering Central Control and each of the stations shall be located unobtrusively and protected.

As a condition for substantial completion of Phase 1 and/or before the system is placed into passenger service operation, the Contractor shall formally certify to the State that the system provided by the Contractor has been designed and installed using the safety principles customarily applied in the transit industry for automated people mover systems in the United States and the system meets or exceeds all applicable federal, state and local laws, rules, codes, orders and regulations."

Installation of the APM system will temporarily disrupt the central concourse garden area. The restaurant and Garden Conference rooms will be destroyed for the installation of the guideway supports. After construction, the contractor will be required to restore the garden to its existing or similar condition.

Construction Cost Estimate: 403 Million 1991 Dollars (Total APM/Maintenance Facility Costs)

Development Schedule: 1990-2010 Time Period

CONSTRUCT CENTRAL CHILLER SYSTEM

At present, the passenger terminals at HIA are served by independent air conditioning facilities. As the terminals expand, and particularly with the new ITB, a central chiller system becomes desirable for reasons of flexibility, energy efficiency and economics. The central system will consist of three air conditioning chiller "anchor" plants complete with equipment, associated piping, valves and controls. This project will include installation of a new centralized chilled water loop system connecting the two new chiller plants with an existing chiller anchor plant. The new system will supply chilled water to the Overseas Terminal, the Interisland Terminal Building and the ITB. The centralized chilled water loop system will be operated and controlled through the existing Energy Monitoring and Control System.

Construction Cost Estimate: 26.5 Million 1991 Dollars

Development Schedule: 1990-1995 Time Period

CONSTRUCT AIRCRAFT ENGINE RUNUP PAD

The need for engine runups associated with the maintenance of both civil and military aircraft at HIA is forecast to grow steadily as aircraft operations increase. At present, maintenance runups take place on runways and taxiways located as remote as possible from inhabited facilities. These runups are, however, beginning to negatively impact the noise environment of the airport and its environs. Also, to perform runups on runways, the runways must be closed and air traffic diverted to other operational runways, which impacts the airfield capacity.

The engine runup pad large enough to accommodate a B747-400 or C5A aircraft will be constructed at the 26L end (Diamond Head side) of the Reef Runway. It will consist of an aircraft hardstand located Diamond Head of the end of Taxiway RA. Taxiway RA will have stabilized shoulders to resist jet blast from engine runups and will provide access to the facility.

Construction Cost Estimate: 7.5 million 1991 Dollars

Development Schedule: 1990-1995 Time Period

INSTALL MICROWAVE LANDING SYSTEM (MLS)

At present, HIA uses an Instrument Landing System (ILS) and a Localizer Directional Aid (LDA) as aircraft navigational aids during landings. These aids provide only one path in space that all aircraft must follow. To allow for more efficient and safer use of the existing HIA airspace, a Microwave Landing System (MLS) will be installed at HIA in the future. Its location will be determined by an FAA study, and will provide this increased use of the airspace by providing multiple flight paths and more precise navigational data. It may also provide opportunities to reduce aircraft noise impacts on the

airport environs by changing flight paths. As shown on Figure II-3, an MLS is planned to be located for the approach to Runway 26L during Kona wind conditions.

Construction Cost Estimate: 3 Million 1991 Dollars

Development Schedule: 2000-2010 Time Period

ACQUIRE LAND FOR AIRPORT USE

The acquisition of 24 acres of land on Ualena Street (Figures II-5 and II-6) bordering HIA is required for expansion of the airport. The Ualena Street property acquisition includes Ualena Street and is bordered by Lagoon Drive and Paiea and Aolele Streets. The area is planned for an intra-airport ride system maintenance yard, airport office building, overseas air cargo facilities, flight kitchen and an airport base yard. The acquisition of the Ualena Street lands element of the HIA development program is related to the Development of the Kapalama Lands project described later in this chapter.

The relocation of the lessees will be accomplished in two phases. Existing Phase 1 lessees (Figure II-5) would be relocated to sites within the existing HIA boundary; on new land to be acquired by the Department of Transportation, Airports Division, (e.g. the Chevron Property); or within existing acceptable (to lessees) industrial parks or areas on Oahu. The existing Phase 2 lessees (Figure II-6) will be able to remain on their properties until the expiration of their leases. As part of the property acquisition program, a Relocation Assistance Program has been developed to assist in the relocation of both Phase 1 and 2 lessees. The relocation and property acquisition will be in compliance with all applicable State and federal guidelines.

The Chevron property, Chevron's Honolulu Distribution Center, is being acquired for use as a relocation site for certain Ualena Street businesses. In the interim, however, the land will be leased from Chevron. The businesses which will be relocated to the Chevron property have a demonstrated need to be in close proximity to the downtown Honolulu area, the waterfront and/or HIA. The anticipated land uses by the relocated tenants are compatible with the long-term goals for the area as stated in the Honolulu Waterfront Master Plan (Helber, et.al., 1989). The property is presently undergoing a hydrocarbon remediation program which is being funded and conducted by Chevron. This

remediation program will be monitored by the State of Hawaii, Department of Transportation, Airports Division, to ensure all applicable federal, State and City and County regulations are met.

The Chevron property encompasses 174,063 square feet, and is Tax Map Key (TMK) 1-1-5:35:10 (Lot 35A). Figure II-7 shows the layout and location of the property to be acquired (outlined area). It is located approximately three miles Diamond Head (southeast) of HIA along Nimitz Highway, neighboring Pier 35. This property is presently used by Chevron as an office, fuel transfer, and storage area. The property is zoned Industrial by the City and County of Honolulu and has an Urban designation in the State of Hawaii's land use classification.

Development of the Chevron property will be limited to the demolition of two existing buildings, the equipment repair shop and the vehicle shop. The cleared area will be used to accommodate a new (approximately 30,000 square foot) building, which will be used primarily as warehouse and office space, with rooftop parking. An access ramp will also be constructed to the proposed rooftop parking.

Cost Estimate: 163 Million 1991 Dollars (including tenant relocation costs)

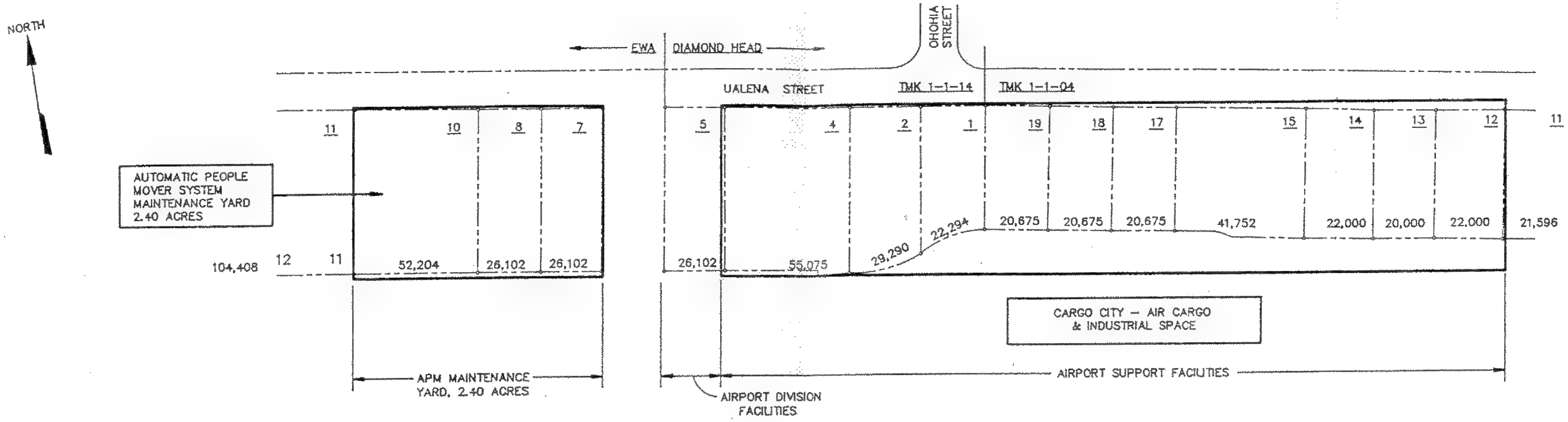
Development Schedule: 1990-2000 Time Period

CONSTRUCT NEW AIR CARGO/INDUSTRIAL COMPLEX AND APRON (CARGO CITY)

The need to relocate air cargo tenants from the Diamond Head Service Court, where the new ITB Complex will be located, and from newly acquired airport land located between Aolele and Ualena Streets, requires provision of facilities to accommodate the displaced businesses. The construction of air cargo and other airport-related industrial facilities by the State on the newly acquired land will reduce tenant relocation costs, facilitate the new ITB development schedule and produce revenues for the airport in the future.

PHASE 1 OF UALENA STREET MAKAI INDUSTRIAL LOT ACQUISITION FOR EXPANSION OF HONOLULU INTERNATIONAL AIRPORT JANUARY 1, 1991 THRU DECEMBER 31, 1994

SCALE: 1" = 200'



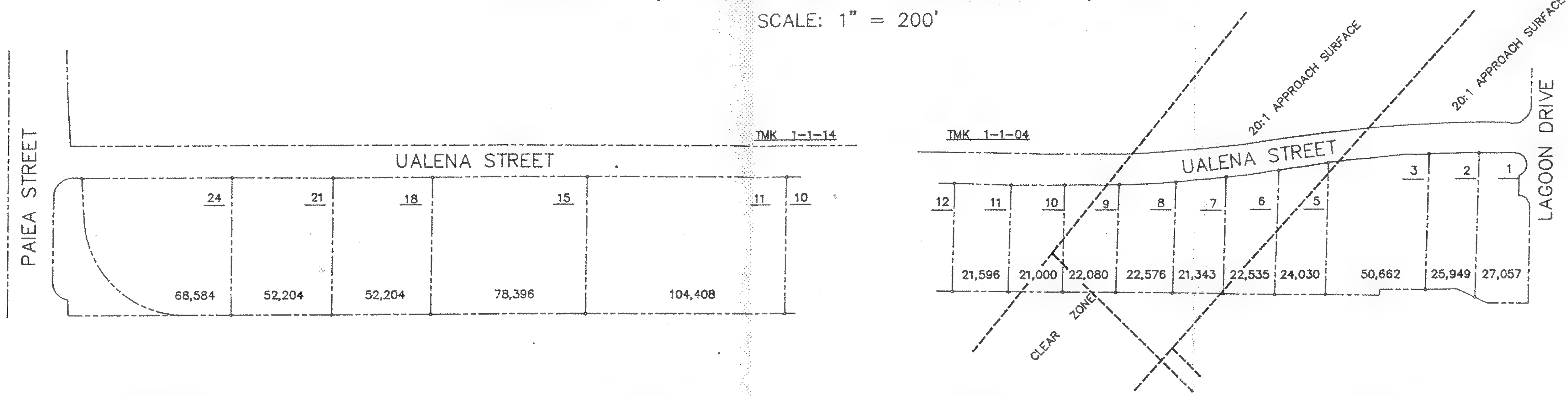
LESSOR	LESSEE	ADDRESS	TMK	AREA
LOYALTY DEVELOPMENT COMPANY, LTD	M/M EDWIN MURAI	3077 UALENA STREET	1-1-14:10	52,204 sq ft
LOYALTY DEVELOPMENT COMPANY, LTD	KARLCHRIS ASSOCIATES	3069 UALENA STREET	1-1-14:8	26,102 sq ft
TAIHOOK ASSOCIATES	W. T. YOSHIMOTO CORP.	3059 UALENA STREET	1-1-14:7	26,102 sq ft
TAIHOOK ASSOCIATES	JEANETTE LUM CHUN	3039 UALENA STREET	1-1-14:5	26,102 sq ft
TAIHOOK ASSOCIATES	JEANETTE LUM CHUN	3017 UALENA STREET	1-1-14:4	55,075 sq ft
TAIHOOK ASSOCIATES	S & M SAKAMOTO	3005 UALENA STREET	1-1-14:2	29,290 sq ft
TAIHOOK ASSOCIATES	NUNUI ASSOCIATES	2999 UALENA STREET	1-1-14:1	22,294 sq ft
TAIHOOK ASSOCIATES	JEAN KINGSLEY	2989 UALENA STREET	1-1-04:19	20,675 sq ft
TAIHOOK ASSOCIATES	HARVEY SHERMAN	2979 UALENA STREET	1-1-04:18	20,675 sq ft
TAIHOOK ASSOCIATES	FRED SALASSA	2969 UALENA STREET	1-1-04:17	20,675 sq ft
TAIHOOK ASSOCIATES	HARVEY SHERMAN	2959 UALENA STREET	1-1-04:15	41,752 sq ft
TAIHOOK ASSOCIATES	HARVEY SHERMAN	2939 UALENA STREET	1-1-04:14	22,000 sq ft
TAIHOOK ASSOCIATES	STANDARD ELECTRIC, INC.	2929 UALENA STREET	1-1-04:13	20,000 sq ft
KJL ASSOCIATES	ZIEGLER STEEL CORP.	2919 UALENA STREET	1-1-04:12	22,000 sq ft
				404,946 sq ft
				9.30 ACRES

JULY 1990

AIRPORTS DIVISION DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	**HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT**	Edward K. Noda and Associates, Inc.	PHASE 1 UALENA STREET INDUSTRIAL LOT ACQUISITION	FIGURE **II-5**

PHASE 2 OF UALENA STREET MAKAI INDUSTRIAL LOT ACQUISITION FOR EXPANSION OF HONOLULU INTERNATIONAL AIRPORT JANUARY 1, 1991 THRU DECEMBER 31, 2012

SCALE: 1" = 200'



LESSOR	LESSEE	ADDRESS	TMK	AREA
LOYALTY DEVELOPMENT COMPANY, LTD	HAWAIIAN TELEPHONE CO.	3239 UALENA STREET	1-1-14: 24	68,584 sq ft
LOYALTY DEVELOPMENT COMPANY, LTD	WAREHOUSING COMPANY	3239 UALENA STREET	1-1-14: 21	52,204 sq ft
LOYALTY DEVELOPMENT COMPANY, LTD	LOYALTY DEVELOPMENT CO.	3209 UALENA STREET	1-1-14: 18	52,204 sq ft
LOYALTY DEVELOPMENT COMPANY, LTD	INDUSTRIAL WELDING, INC.	3169 UALENA STREET	1-1-14: 15	78,396 sq ft
LOYALTY DEVELOPMENT COMPANY, LTD	JANE HONG, etal	3129 UALENA STREET	1-1-14: 11	104,408 sq ft
KJL ASSOCIATES	ROKAN PARTNERS	2909 UALENA STREET	1-1-04: 11	21,596 sq ft
KJL ASSOCIATES	ROKAN PARTNERS	2895 UALENA STREET	1-1-04: 10	21,000 sq ft
KJL ASSOCIATES	K.S. CORPORATION	2885 UALENA STREET	1-1-04: 9	22,080 sq ft
KJL ASSOCIATES	2875 UALENA INVESTMENT CO.	2875 UALENA STREET	1-1-04: 8	22,576 sq ft
KJL ASSOCIATES	THOMAS FUJIKAWA PAINTING CO.	2865 UALENA STREET	1-1-04: 7	21,343 sq ft
KJL ASSOCIATES	CAR & BODY, INC.	2855 UALENA STREET	1-1-04: 6	22,535 sq ft
KJL ASSOCIATES	EDGARDO PUGLIA	2845 UALENA STREET	1-1-04: 5	24,030 sq ft
KJL ASSOCIATES	COMMERCIAL SHELVING, INC.	2835 UALENA STREET	1-1-04: 3	50,662 sq ft
KJL ASSOCIATES	M/M IAN FUKUMITSU	2815 UALENA STREET	1-1-04: 2	25,949 sq ft
KJL ASSOCIATES	M/M NORMAN KRONICK	2805 UALENA STREET	1-1-04: 1	27,057 sq ft
				614,624 sq ft
				±14.10 ACRES

APRIL 1991

AIRPORTS DIVISION
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT

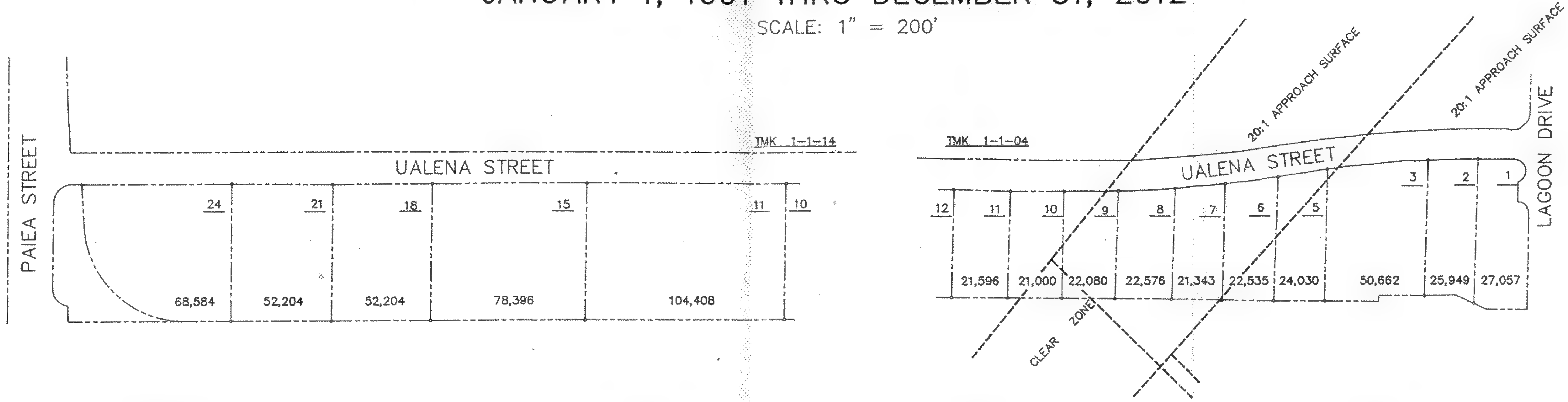
Edward K. Noda and Associates, Inc.

PHASE 2 UALENA STREET INDUSTRIAL LOT ACQUISITION

FIGURE II-6

PHASE 2 OF UALENA STREET MAKAI INDUSTRIAL LOT ACQUISITION FOR EXPANSION OF HONOLULU INTERNATIONAL AIRPORT JANUARY 1, 1991 THRU DECEMBER 31, 2012

SCALE: 1" = 200'



LESSOR	LESSEE	ADDRESS	TMK	AREA
LOYALTY DEVELOPMENT COMPANY, LTD	HAWAIIAN TELEPHONE CO.	3239 UALENA STREET	1-1-14:24	68,584 sq ft
LOYALTY DEVELOPMENT COMPANY, LTD	WAREHOUSING COMPANY	3239 UALENA STREET	1-1-14:21	52,204 sq ft
LOYALTY DEVELOPMENT COMPANY, LTD	LOYALTY DEVELOPMENT CO.	3209 UALENA STREET	1-1-14:18	52,204 sq ft
LOYALTY DEVELOPMENT COMPANY, LTD	INDUSTRIAL WELDING, INC.	3169 UALENA STREET	1-1-14:15	78,396 sq ft
LOYALTY DEVELOPMENT COMPANY, LTD	JANE HONG, etal	3129 UALENA STREET	1-1-14:11	104,408 sq ft
KJL ASSOCIATES	ROKAN PARTNERS	2909 UALENA STREET	1-1-04:11	21,596 sq ft
KJL ASSOCIATES	ROKAN PARTNERS	2895 UALENA STREET	1-1-04:10	21,000 sq ft
KJL ASSOCIATES	K.S. CORPORATION	2885 UALENA STREET	1-1-04:9	22,080 sq ft
KJL ASSOCIATES	2875 UALENA INVESTMENT CO.	2875 UALENA STREET	1-1-04:8	22,576 sq ft
KJL ASSOCIATES	THOMAS FUJIKAWA PAINTING CO.	2865 UALENA STREET	1-1-04:7	21,343 sq ft
KJL ASSOCIATES	CAR & BODY, INC.	2855 UALENA STREET	1-1-04:6	22,535 sq ft
KJL ASSOCIATES	EDGARDO PUGLIA	2845 UALENA STREET	1-1-04:5	24,030 sq ft
KJL ASSOCIATES	COMMERCIAL SHELVING, INC.	2835 UALENA STREET	1-1-04:3	50,662 sq ft
KJL ASSOCIATES	M/M IAN FUKUMITSU	2815 UALENA STREET	1-1-04:2	25,949 sq ft
KJL ASSOCIATES	M/M NORMAN KRONICK	2805 UALENA STREET	1-1-04:1	27,057 sq ft
				614,624 sq ft
				±14.10 ACRES

APRIL 1991

AIRPORTS DIVISION DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT	Edward K. Noda and Associates, Inc.	PHASE 2 UALENA STREET INDUSTRIAL LOT ACQUISITION	FIGURE II-6

2.13 LANDSCAPED THEME PARK

This project has been proposed to provide airport users, especially interisland terminal users, a park-like setting in which to relax and rest as well as to provide all airport users with a pleasant airport entrance experience. Alternatives to the proposed project include the "no action" alternative as well as alternative locations for the park and use of the site for airport employee and public parking. These alternatives have been rejected by the DOT-A because they do not accomplish the purposes of the project and/or would result in the inappropriate siting of the park. Employee parking would be provided at another location as described above, and at the new interisland terminal parking structure.

2.14 LEI STAND RELOCATION

This project is necessary to allow the airport roadway system to be completed and is a result of the new interisland terminal construction and siting. The alternative of "no action" is unacceptable because of the adverse impacts on the roadway system. Alternative locations could be selected, however, the location selected provides the lei stands the greatest exposure to potential customers while maintaining smooth traffic flow through the airport. Therefore, alternative sites are not considered practical or in the best interests of the lei sellers or airport operations.

2.15 CONSTRUCT AIRCRAFT WASH PAD (SOUTH RAMP)

This project has been proposed to eliminate the need for aircraft using the South Ramp facilities from having to taxi to North Ramp aircraft wash pad facilities. Use of the HIA taxiways for this type of activity would be inefficient and present airport operational difficulties. Similarly, it would not be an economical aircraft operation and could present adverse safety and noise impacts. Therefore, the primary alternatives to this project are for aircraft operators to forego a portion of their aircraft maintenance procedures while in Honolulu, taxi to North Ramp wash pads or the "no-action" alternative. None of these alternatives are considered to be prudent and/or an economical use of airport and/or

aircraft facilities. Consequently the alternatives have been rejected by the DOT-A in favor of the preferred alternative.

2.16 INTERISLAND TERMINAL, MAUKA PIER EXTENSION

This project is necessary to allow for the flexible use of the new Interisland terminal. The other major alternative considered was "no-action". The "no-action" alternative would not allow for the B747 size aircraft to utilize the mauka portion of the Interisland complex. Also, it would not allow for flexible use of the aircraft apron area. Therefore, the "no-action" alternative was rejected by the DOT-A. The necessity to be connected to the Interisland terminal eliminated all other alternatives.

3. COMPARATIVE EVALUATION

In general, the discussion of alternatives within an EIS is for the purpose of alerting decision makers that the proponent of a given project has carefully evaluated various alternatives and selected the preferred alternative that has the least environmental impacts while allowing the project to best meet the objectives and purposes of the proposed project. In this instance, there are several projects that are being proposed in the State's efforts to meet the general objective of providing the citizens of the State and the travelling public with an airport that operates safely, efficiently and cost effectively. Therefore, while there may be several possible options and means of accomplishing these objectives, the various projects that have been proposed have been evaluated in association with one another as well as individually. This type of analysis has been performed by the various projects' program managers and DOT-A in an integrated manner. The results of the analyses performed indicate that the projects as proposed will provide the facilities that will be required to serve the travelling public in the immediate and long-term time frames and will provide those facilities in a cost effective manner. This will result in an airport that operates with functional efficiency and cost effectiveness in the long-term.

CHAPTER IV

DESCRIPTION OF THE AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES AND MITIGATION MEASURES

1. INTRODUCTION

The general and/or specific physical, natural and social environmental characteristics, archaeological and cultural resources and infrastructure and public facilities serving the proposed projects and area are described in the following sections of this chapter. The analyses presented herein are generally based on an assumed "worst case" situation that would include the full development of the projects, as described in Chapter II, within the project boundaries. Should fewer elements or portions of the proposed projects be constructed, it is presumed that potential impacts would be less for most environmental resource issue areas. Additionally, the information contained herein, to the extent possible at this time, covers both the on- and off-site impacts that could result from the proposed projects. For ease of review and evaluation, information and analyses of the impacts of the proposed projects are provided from the standpoint of existing conditions, probable impacts and mitigation measures that would be required to minimize potential adverse impacts. The criteria against which the significance of potential impacts are measured are also stated.

The information contained in this chapter has been developed from (1) specific field and/or office environmental, engineering or planning studies conducted specifically for this project, the HIA master plan, the concept plans developed for each project and this EIS; and (2) the input, advice, guidance and information provided by public agencies, the State DOT-A, community and private organizations, and the Program Managers for the various projects, prior to and during the development and review of this EIS.

The potential impacts that could result from the proposed projects are summarized in Table IV-1 and discussed in greater detail in the following sections of this chapter.

TABLE IV-1

HIA ENVIRONMENTAL IMPACT STATEMENT PROJECT/ENVIRONMENTAL RESOURCE ISSUE AREAS

PROJECT/ENVIRONMENTAL RESOURCE	GEOL/ SOIL	AG POTENTIAL	GRND/SURF WATER	FLOODS TSUNAMIS	VIEWS	FLORA FAUNA	MAR ENVIR	SOCIO ECON	TRAFF	AIR QUAL	NOISE	WATER SUPP	SOLID WASTE	ELECT COMM	HLTH CARE	SCHLS	REC FAC	LAND USE	ARCH	SEW SYS	POL/ FIRE
Construct ITB Complex	■		■	●	○	○		●	■	●	●	○	●	■	○			○		●	
Expand Overseas Terminal, Diamond Head Concourse Gates 3, 2, 1A, 1B, 1C, 1D and 1E)	■		■	○	○	○		●	●	●	●	○	○	■	○			○		●	○
Relocate HIA Satellite Fuel Farm	○		●	●	○	○	■	○	■	●	○	○		■	○		○	●			■
APM System and Supporting Facilities	○			●	○	○		●	■	■	○		○	■	○			○			
Construct Central Chiller System				○	○					○	○	○		●	○						
Construct Engine Runup Pad				○	○					●	●			○	○						
Install Microwave Landing System (MLS)				○						○	○			○							
Acquire Land for Airport Use			○	○	○	○		■	■		○	○	○	●	○			■		■	○
Construct New Air Cargo/Industrial Complex (Cargo City)	○		○	○	○	○		■	●	■	●	○	●	■	○			●		●	○
Development of Kapalama Lands				○	○	○		○	●	○	○	○	○	●	○			■		●	
Construct New Electrical Power Substations and Distribution Systems				○	○					○	○			■							
Roadway Improvements, Parking Facilities	○			○	○				■	●	●			○				○			○
Landscaped Theme Park				○	○	○				○	○	○					○				
Relocate Lei Stands				○	○	○		○	○	○	○										
Construct Aircraft Wash Pad (South Ramp)				○						○	○	○								●	
Interisland Terminal, Mauka Pier Extension	○		○	○	○				○	●	○			○						○	○

LEGEND: ■ = Significant or major impact area (positive or negative); ● = Moderate impact area; o = Minor or insignificant impact area; Blank = No impact

2. PHYSICAL ENVIRONMENT

2.1 GEOLOGY, PHYSIOGRAPHY, SOILS AND AGRICULTURAL POTENTIAL

2.1.1 Existing Conditions

HIA is constructed mostly on mixed fill material overlying an ancient submerged coralline reef platform. Volcanic (basaltic) materials are found beneath the coralline reef platform. The mixed fill material consists of material dredged from the ocean or hauled from nearby areas, garbage and general materials from other sources. The majority of the various project sites are covered with asphaltic or concrete materials and have been used for aviation or industrial/commercial related activities for several years.

The topography of HIA is relatively flat with the majority of the airport being at an elevation of about +13 feet above mean sea level (MSL). There are no top soils on the project sites and the area is not used for agricultural purposes. None of the project site areas are classified under the Agricultural Lands of Importance to the State of Hawaii (ALISH) system.

2.1.2 Probable Impacts

The following projects could be impacted by or impact the geology, physiography, soils and agricultural potential of the HIA area:

- Construct ITB Complex.
- Expansion of Overseas Terminal/Hardstands/Gates, Diamond Head Concourse Gates 3, 2, 1A, 1B, 1C, 1D, 1E and 2 unnumbered hardstands.
- Relocate HIA Satellite Fuel Farm.
- APM System and Supporting Facilities.
- Construct New Air Cargo Industrial Complex (Cargo City).
- Roadway Improvements and Additional Parking Facilities.
- Interisland Terminal, Mauka Pier Extension

All other proposed projects would be unaffected by and/or not affect the geology, physiography, soils and agricultural potential of the HIA area. Of the preceding, the ITB project has the potential to be seriously impacted by the physical conditions of the site, due in part to the leakage of fuel from the satellite fuel facility as well as the need to construct a basement level which will be below the normal water table that lies at an elevation of about 0.0 MSL. The Diamond Head Concourse Extension will also have a significant impact, due to the excavation for the footings and aircraft hardstands. The degree of impact significance on or by the geology, physiography, soils or agricultural potential of the HIA area on the various projects has been assessed on the basis of alteration to existing conditions or effects on potential future conditions.

Development of the ITB Complex and Overseas Terminal Hardstands projects will significantly affect the existing physical condition of the project area because of the need to excavate an approximately 500,000 square-foot basement for the building. This work, as will be described in greater detail below (see Section 2.2), will require the removal of about 400,000 cubic yards of material, a portion of which has been contaminated by hydrocarbons from the existing satellite fuel farm. The material to be removed represents about 24,500 (16 cubic yard) truck-loads. It is presently planned that about 160,000 cubic yards of this material will be disposed of in the safety area adjacent to the Reef Runway. The remainder of the material would be disposed of around or near HIA, probably within a five-mile radius. The disposal of all materials would be in compliance with applicable federal, State and county rules and regulations concerning hazardous wastes.

Similarly, development of the APM System and Supporting Facilities, new Air Cargo/Industrial Complex, Roadway Improvements and Parking Facilities, and the Interisland Terminal Mauka Pier Extension will require some excavation to construct footings, drive pilings or for grading purposes. However, this work will be much less than that required for the ITB and is not expected to significantly impact the existing character of the project areas.

Because none of the projects' areas are on agricultural lands, the proposed projects will not have any impact on the agricultural potential of the areas. Development of the projects as planned would essentially preclude use of the lands on which they are located for agricultural purposes in the future.

2.1.3 Mitigation Measures

Because of the general lack of impacts resulting from the majority of the projects that could impact the geology, physiography, soils or agricultural potential of the project areas, measures to minimize potential adverse impacts for the majority of the projects are not warranted. However, in the case of the ITB and Overseas Terminal Expansion projects, specific measures will be required to assure that no further contamination of the soils in the disposal areas occurs and to assure that no further contamination of the project area occurs. As noted above, the disposal of the soils and materials removed for the ITB basement will be disposed of in compliance with appropriate federal, State and county rules and regulations. This will include a hydrocarbon remediation program that will be developed in compliance with applicable federal (U.S. Environmental Protection Agency) rules and regulations.

2.2 GROUNDWATER, HYDROLOGY, SURFACE WATER AND DRAINAGE

2.2.1 Existing Conditions

HIA is located in the southwestern, seaward portion of a large lowland, coastal plain created by the deposition of sediments eroded from the basaltic Waianae and Koolau ranges. The coastal plain deposits or caprock are composed of terrestrial alluvial sediments, marine sediments and coralline limestone. The caprock forms a wedge that thickens seaward and is an estimated 7600 feet thick below HIA. The caprock is composed of silts, clays, gravels, sands and calcareous coral reef deposits that have variable, though generally low, permeabilities.

The caprock contains groundwater that ranges in salinity from fresh to sea water. The depth of the caprock groundwater in the HIA area ranges from about 6 to 10 feet below ground surface (bgs). The caprock groundwater is recharged by infiltration of irrigation water and incident rainfall, by springs in the basalt aquifer at the edge of the coastal plain and by upward flow into the caprock from artesian parts of the underlying basalt aquifer. The basaltic lavas that underlie the caprock contain basal groundwater, the upper portion of which is the fresh water aquifer.

During a geotechnical investigation of the proposed ITB and Diamond Head Concourse project areas (Hirata, 1989), petroleum hydrocarbons were encountered in the borings. Hirata found free jet fuel with a thickness between 0.3 and 15 inches floating on groundwater at depths of 6.8 to 8.1 feet bgs. In addition, jet fuel odors were encountered in other borings. A groundwater monitoring study (Engineering Science, 1990) was conducted in the ITB Complex area and reported that the free product plume found in the area of the Diamond Head Service Court is approximately 19 acres in size. Of this 19 acres, approximately 2.6 acres (or approximately 20.56 percent of the ITB footprint) within the north central, northeastern and eastern parts of the ITB are underlain by free product and associated contaminated soil and groundwater. The estimated actual in-ground thickness of free product within the complex footprint ranges from a sheen to 0.9 feet thick. This equals about 3,500 gallons of free product within the approximately 2.6 acre footprint.

In addition to the ITB Complex area, hydrocarbon contaminated soils have also been found in the area of the new interisland terminal construction and it is possible that other areas around fueling pits and/or tank sites are contaminated to some extent.

Because the majority of the HIA area is developed and paved, master planned surface water drainage systems are in place and have been or are planned to be expanded to meet future increased drainage requirements. Because of the relatively low rainfall at the airport, surface water runoff is generally low. There are two primary surface water drainage channels that receive runoff water; the channel that runs along Aolele Street and the Manuwai canal that receives surface waters from the westerly airport areas and Hickam Air Force Base. Both receive runoff waters from areas outside the HIA boundaries. The Aolele Street drainage channel, which is also known as the North Peripheral Ditch, drains into Keehi Lagoon. The Manuwai Canal drains into the Marine Pond, which drains into Hickam Harbor.

2.2.2 Probable Impacts

The following projects could be impacted by or impact the groundwater, hydrology, surface water and/or drainage of the HIA area:

- Construct ITB.

- Expansion of Overseas Terminal Hardstands/Gates, Diamond Head Concourse (Gates 3, 2, 1A, 1B, 1C, 1D and 1E).
- Relocate HIA Satellite Fuel Farm.
- Acquire Land For Airport Use (Ualena Street).
- Construct New Air Cargo/Industrial Complex (Cargo City).
- Interisland Terminal, Mauka Pier Extension

All other proposed projects would be unaffected by and/or not affect the groundwater, hydrology, surface water and/or drainage of the HIA area. Of the preceding, the ITB and Diamond Head Concourse Extension projects have the potential to be seriously impacted by the existing contaminated groundwater and soils conditions of the site, due in part to the leakage of fuel from the existing satellite fuel facility, and the need to construct a basement level for the ITB which will be below the normal water table that lies at an elevation of about 0.0 MSL and footings for the Diamond Head Concourse Expansion. The degree of impact significance on or by the groundwater, hydrology, surface water and/or drainage of the HIA area on the various projects has been assessed on the basis of the ability to remove and dispose of the contaminated groundwater and soils of the area as well as the ability to prevent future contamination.

The ITB Project includes the excavation of about 400,000 cubic yards of materials to construct the basement level of the complex. A groundwater monitoring study has been conducted (Engineering Science, 1989) and determined that the extent of the contamination in the Diamond Head Service Court covers approximately 19 acres, with free product thickness ranging from a "sheen" to about three feet. The results indicate that approximately 2.6 acres (or approximately 20.56 percent) of the ITB footprint within the north central northeastern and eastern parts are underlain by free product and associated contaminated soil and groundwater. The estimated actual in-ground thickness of free product within the complex footprint ranges from a sheen to 0.9 feet thick. This equals about 3,500 gallons of free product within the approximately 2.6 acre footprint. The contaminated soil and groundwater will require removal prior to and during construction of the complex. This will be accomplished by excavating the material and hauling a portion of it to the Reef Runway side safety areas, where the soils would be spread out in lifts about 9 inches thick on an impervious barrier, hydrogen peroxide and hydrocarbon consuming bacteria applied and

an oil/water separator with discharge of non-contaminated water in the sewer system and recycling of the collected oil/water discharge. Soils will be spread in layers in the Reef Runway safety areas, treated and allowed to remain as non-contaminated fill materials. All treatment and disposal of contaminated groundwaters will be in compliance with applicable federal and State regulations. Relocation of the present satellite fuel farm and construction and operation of new facilities would be accomplished in compliance with applicable State and federal rules and regulations. These measures and leakage monitoring system will assist in assuring that future contamination of groundwater supplies does not occur.

2.3 NATURAL HAZARDS

2.3.1 Existing Conditions

Given the coastal location of HIA, the primary natural hazards to which the area is subjected are high waves/tsunami events, possible flooding and earthquakes.

According to the National Flood Insurance Program, Flood Insurance Rate Map (FIRM), prepared by the Federal Emergency Management Agency, the majority of the HIA area is designated Zone D, an area of undetermined flood hazards. A small area near the mouth of the north peripheral ditch is in Zone AE, with base flood elevations of four feet.

The majority of the HIA area is at an elevation of about +13 feet MSL, and the airport is protected by the Reef Runway Protective Structure as well as its location inland from Keehi Lagoon and the fringing coral reef protecting the lagoon. The maximum estimated sea water level in Keehi Lagoon due to a hurricane event is +5.9 feet MLLW(+5.1 feet MSL). It is not likely that high waves, a tsunami, or a hurricane would affect the project sites covered within this EIS.

Earthquake hazards at HIA, as with the rest of Oahu and the State of Hawaii, cannot be avoided. However, the HIA area is not subjected to greater earthquake hazards than other areas of the island.

2.3.2 Probable Impacts

All of the proposed HIA projects could be impacted by or impact the natural hazard conditions of the HIA area to a certain extent. That is, because of the location of the airport, all of the airport could be subject to flooding, high waves, tsunamis and/or earthquakes. However, each of these hazards is mitigable and significant impacts caused by natural hazards are not expected to occur.

2.3.3 Mitigation Measures

The primary measures that will be employed to mitigate potential impacts caused by the natural hazards to which the airport area is subjected are locating facilities and structures to avoid potential hazards and the design, construction and operation of new facilities in compliance with applicable building design standards and codes. For example, the relocated fuel farm must be constructed at elevations above the base flood elevation.

2.4 VISUAL ATTRIBUTES

2.4.1 Existing Conditions

Honolulu International Airport and surrounding land uses are presently a built-up commercial/industrial area. The airport buildings have been designed to be both aesthetically pleasing and functional, given that the facilities must process over 21 million passengers that pass through the airport and the over 400,000 aircraft operations that are conducted at the airport. The goal has been to design and construct facilities that have both a human scale as well as an aircraft scale. Interspersed with the buildings are gardens and extensive landscaping that soften the visual impacts of the buildings and provide the traveller with a feeling of Hawaii as a tropical paradise as well as a meeting point for western, eastern and polynesian cultures.

2.4.2 Probable Impacts

The visual attributes of the HIA area will be affected primarily by the following proposed projects:

- ITB Complex
- Expand Overseas Terminal, Diamond Head Concourse (Gates 3, 2, 1A, 1B, 1C, 1D and 1E)
- Relocate HIA Satellite Fuel Farm
- APM System and Supporting Facilities
- Central Chiller System
- Construct Engine Runup Pad
- Acquire Land For Airport Use (Ualena Street)
- Construct New Air Cargo/Industrial Complex (Cargo City)
- Development of Kapalama Lands
- Roadway Improvements and Additional Parking Facilities
- Landscaped Theme Park
- Relocate Lei Stands
- Interisland Terminal, Mauka Pier Extension

The degree of impact significance on the visual attributes of the HIA area by the various projects has been assessed on the basis of alteration (adding, subtracting and/or modifying existing conditions).

Although architectural design of many of the above listed projects has not begun and/or will follow existing designs, e.g., Expand Overseas Terminal, Diamond Head Concourse, it is expected that the new facilities will be designed to blend in with and compliment existing HIA buildings. Similarly, there will be an increase in the numbers of new airport buildings and those buildings will replace many smaller buildings, the majority of which are warehouse type facilities that do not conform to existing HIA design guidelines and/or style. Therefore, although new building facilities will be added to HIA, it is expected that these facilities will improve the overall visual image of the airport through the implementation of design standards and guidelines. Further, projects such as the

Landscaped Theme Park are proposed not only to provide a park-like setting to the entry to HIA, but also to improve the visual impact of the airport. Consequently, the visual impacts resulting from the proposed projects are expected to be positive and/or insignificant.

In many cases, airport operations proceed around the clock, and all of the facilities have interior and exterior lighting. None of the new facilities, however, utilize high intensity lighting which might create an annoyance among people in the vicinity of the installation.

2.4.3 Mitigation Measures

Because the visual impacts resulting from the proposed projects are expected to be positive or insignificant, mitigation measures to minimize adverse impacts are not warranted. New facilities will be architecturally designed in compliance with HIA design guidelines and standards, thereby complementing existing facilities. Landscaping will also be incorporated into the design to further lessen the visual impact.

3. NATURAL ENVIRONMENT

3.1 TERRESTRIAL BIOTA

3.1.1 Existing Conditions

The existing flora of HIA and the surrounding areas that would be impacted by the proposed projects, consists primarily of exotic (introduced) plant species. The airport is located in what would generally be called the kiawe/lowland shrub vegetation zone. However, because of the urbanization of the area, the characteristic vegetation of this zone [kiawe (*Prosopis pallida*), koa haole (*Leucaena leucocephala*) and finger grass (*Chloris inflata*)] has been replaced by introduced landscape species such as coconut palms (*Cocos nucifera*), a variety of other palms, various *Ficus* species and other commonly used landscape plants. There are no known endangered or threatened species of plants within the airport boundaries. The Manuwai Canal, the drainage channel along Aolele Street, and Keehi Lagoon do not harbor endemic, endangered or threatened species of plants.

The two faunal groups of importance in the HIA area are birds and marine life. Both faunal groups have been studied in detail over the past 20 years (see Berger and Walker, 1971; R. M. Towill Corp., 1976; R. L. Walker, 1978; U.S. Department of Transportation, 1972; Bowers, 1976; Chapman, 1979; AECOS, 1979; and KFC Airport, Inc., 1989). The majority of the airport related marine and terrestrial fauna work has been conducted with regard to the HIA Reef Runway project, the Keehi Lagoon Recreational Plan or the 1989 HIA Master Plan Update and Noise Compatibility Program, Volume 3, Environmental Assessment.

In general, the HIA and immediately surrounding areas serve as habitat for about 17 species of exotic (introduced) birds. Keehi Lagoon serves as a resting and feeding area for various water birds, including the endangered Hawaiian Stilt (*Himantopus mexicanus knudseni*). Other than the introduced species, none of the water birds are known to nest and breed within the HIA area.

The marine life of Keehi Lagoon is described in detail in the above noted 1989 HIA Master Plan Update Environmental Assessment. In general, the lagoon marine life is typical of environmentally stressed areas, but does serve as the habitat for a variety of invertebrate and vertebrate (fish) species, some of which have recreational and/or supplemental food source importance.

3.1.2 Probable Impacts

The flora and fauna of the HIA area will be affected primarily by the following proposed projects:

- ITB Complex
- Expansion of the Overseas Terminal, Diamond Head Concourse
- Relocate HIA Satellite Fuel Farm
- APM System and Supporting Facilities
- Acquire Land For Airport Use (Ualena Street)
- Construct New Air Cargo/Industrial Complex (Cargo City)

- Development of Kapalama Lands
- Landscaped Theme Park
- Relocate Lei Stands

The degree of impact significance on the flora and fauna of the HIA area by the various projects has been assessed on the basis of alteration (adding, subtracting and/or modifying existing vegetation and wildlife habitat conditions).

The proposed projects that could impact the flora and faunal characteristics of the HIA area will involve increasing the quantity of vegetation in and around the airport through landscaping, especially in the Landscaped Theme Park, thereby increasing habitat opportunities for land birds. None of the proposed projects is expected to alter or affect existing water bird habitat characteristics or species. Consequently, the proposed projects are expected to result in no impacts or insignificant positive impacts to the flora and fauna of the airport and area. Impacts to the endangered Hawaiian Stilt are expected to be insignificant.

3.1.3 Mitigation Measures

Because of the lack of adverse impacts and/or insignificant positive impacts to the flora and fauna of the HIA project area, measures to minimize or mitigate adverse impacts are not warranted. The construction of the APM system will temporarily disturb the Central Concourse gardens during construction. However, it will be restored to a similar condition.

3.2 MARINE BIOTA

3.2.1 Existing Conditions

As noted above, the marine communities in Keehi Lagoon have been studied in detail over the past 20 years (see Bowers, 1976; Chapman 1979; AECOS, 1979; KFC Airport, 1989 and Edward K. Noda & Assoc., 1990). The inner lagoon is poorly populated by invertebrates and demersal fish, of which most species are characteristic of disturbed habitats. Studies in conjunction with the proposed Keehi Lagoon Recreation Plan and the 1989 HIA Master Plan Update (OI Consultants, 1986 and 1988; AECOS, 1986; and Brock,

1986) indicate that significant changes to the water quality and/or benthic faunal of the lagoon have not occurred since construction of the Reef Runway.

3.2.2 Probable Impacts

The only project that could have the potential for significantly affecting the marine environment in the HIA area would be the relocation of the satellite fuel farm. The site presently preferred by the State is located on the shoreline adjacent to Keehi Lagoon. None of the other projects proposed include work on or near the shoreline. Similarly, projects that might affect surface water drainage channels that empty into Keehi Lagoon will be performed in compliance with appropriate federal and State rules and regulations, thereby preventing construction or facility operations introducing potential contaminants into the drainage channels.

Oceanic Institute dba Oceanic Consultants, Inc. completed an analysis in October, 1990 based on a "worst case scenario" of a catastrophic fuel spill. The worst case scenario would be the total rupture of a storage tank and subsequent spill into Keehi Lagoon without discovery.

> *"Impacts on the marine environment related to the potential catastrophic spill of jet fuel into Keehi Lagoon would be the result of exposure to floating fuel, fuel in water emulsions, and water soluble fractions (WSF).*
>
> *Contact with floating fuel would be limited to the intertidal and terrestrial communities along the shoreline. Such contact would probably be immediately fatal to the majority of those organisms, such as sponges, algae, corals, etc. Other organisms which have developed impervious shells (barnacles, oysters, etc.) might be less affected.*
>
> *Contact along the shoreline by fuel in water emulsions would result in both immediate mortality to some or all of the organisms there, and would also result in the sorption of fuel into soil particles. Such fuel would form a reservoir of potentially toxic material which would leach slowly back into the aquatic environment. Bioaccumulation and bioconcentration would result in increased levels of toxic materials within marine organisms; such materials, if not*

immediately fatal, would have the potential for transfer up the food chain to larger fish and potentially to humans who might eat the fish.

The solubility of fractions of the spilled fuel in the water itself would result in mortality to a range of aquatic organisms, including fish, plankton, algae, etc. Such potential for mortality would be short-lived, however, since the majority of the soluble fraction would be rapidly lost by evaporation.

The area of greatest impact would likely be limited to the upper reaches of Keehi Lagoon, Kalihi and Moanalua Streams, the Seaplane runway "A" along Lagoon Drive, and the Keehi Marina area. Under strong tradewinds, however, the floating fuel would be driven out of the Lagoon through the circulation channel adjacent to the Reef Runway, and thence along the coastline in a direction by winds and surface currents. Thus, the area potentially impacted would be much greater than the Lagoon itself.

The duration of the exposure to floating fuel would be a function of climatic conditions at the time of the spill, but would probably be on the order of only a few days. Jet fuel is relatively volatile, and much of it would be lost by evaporation, especially in Hawaii's warm climate. Rates of loss by evaporation of 40-50% per day have been described for light crude oil; similar rates might be expected for jet fuel. At these rates, more than 95% of the spilled fuel would have been evaporated within four days of the spill. Thus, the most likely area of impact by floating fuel would be within the lagoon, with less likelihood of transit to the ocean proper.

The potential impacts of a catastrophic spill of jet fuel from the proposed fueling facility would be large. Given the seriousness of the potential impacts, stringent mitigative measures must be built into the engineering design of the storage depot to minimize the chance of a serious spill."

Other areas which may be impacted by a "worst-case" fuel spill are the proposed Keehi Lagoon marinas and Canoe Center.

The North Peripheral Ditch acts as the principal drainage outlet for the HIA and the adjacent lands mauka of the HIA. The Aquatic Resources Division of the State Department of Land and Natural Resources advises that nehu bait fish as well as other recreational offshore fish have been found in the brackish inter-tidal zone below the canal. Also, there is extensive local shoreline fishing done for recreational and subsistence purposes. To date, there have been occasional petroleum based spills coming from the drainage canal, but these have been minor in nature.

3.3.3 Mitigation Measures

Because of the potentially serious impacts to Keehi Lagoon from a worst case fuel spill, mitigation of this possibility is included in all aspects of the design, construction and operation of this facility. The following paragraphs provide details of the environmental impact mitigating measures to be undertaken for the storage facility itself and for the associated transfer pipelines.

1. Satellite Fueling Facility

The planned new satellite storage facility will be similar in operating concepts to the existing facility, but technically improved and updated to incorporate the latest engineering design criteria, State and U. S. Government Environmental Rules and Regulations, State Waste Water Management Regulations, Uniform Building Codes, National Fire Protection Association and other applicable Codes, Rules and Regulations.

Storage of fuel will be in steel tanks built in accordance with API 650, "Welded Steel Tanks for Oil Storage" and tanks will be contained in a diked area with sufficient capacity to contain the largest spill of fuel. Interior and exterior surfaces of tanks will be coated to minimize corrosion. Pumps and filters will be of the same type as in the existing plant, however, installed for high performance and spill containment. Fuel piping within the satellite facility will be above ground on piping supports except at access road crossings.

Drainage within the satellite fueling facility will include three (3) systems: 1) a storm drain system for the area outside of dikes which flows through a secondary oil/water separation plant; 2) a storm drainage system of the diked area that will feed into a tank for

monitoring and processing through primary and secondary treatment, if necessary, and 3) a tank and equipment water drainage system that flows through primary oil/water separation then through the secondary oil/water separation plant. Reclaimed fuel will be filtered and returned to storage. Effluent from the oil/water separation plant will be disposed of in a manner approved by DOH.

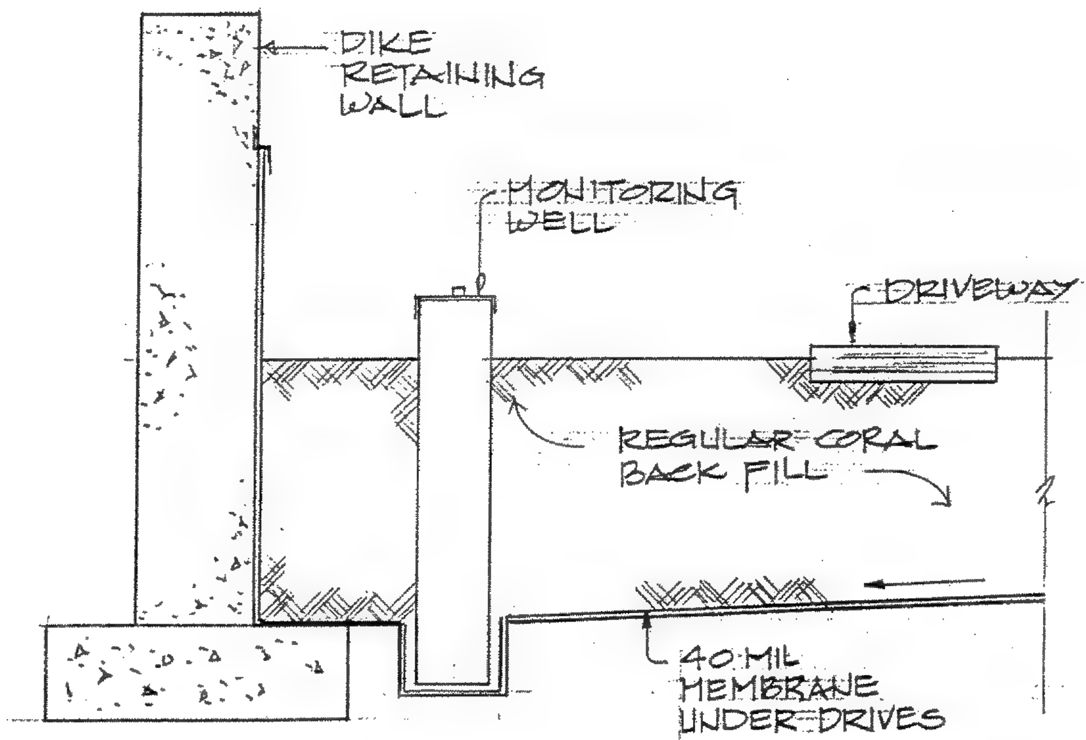
Spill containment and spill fuel processing is of prime importance and consideration. This facility will be designed in compliance with 40 CFR Part 112 and provide in its Spill Protection Containment and Countermeasures (SPCC), the latest membrane systems within all diked areas to form a complete "dike wall to dike wall" barrier to isolate the fuel from the below grade soils or ground waters. Figure IV-1 shows details of the berm and tank containment systems. Berm containment capacity will be equal to the largest storage tank capacity. This spill containment design concept will be used in any process or fuel handling area outside of the diked area such as truck fill stations, maintenance areas, etc.

As further safeguards for the protection of the environment, all tank bottoms and buried steel piping will be provided with cathodic protection for corrosion. All storage tanks will be designed as double-bottomed tanks for monitoring and detecting of tank bottom leakage. There will not be any underground storage of fuel; however, there will be small fuel chamber receptacle in each oil/water processing unit. All processing units will be fiberglass, double wall construction and fitted for leak detection.

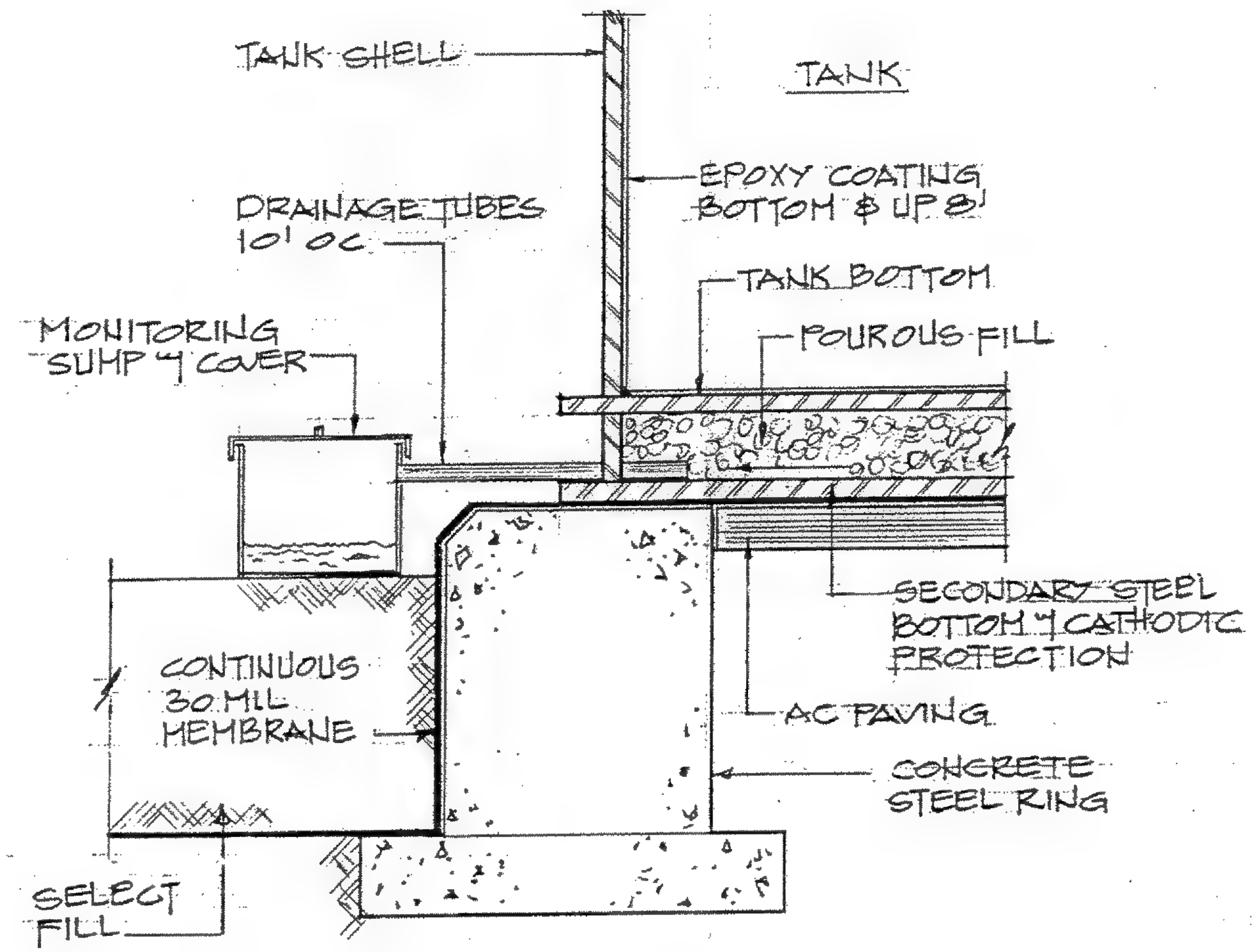
2. Distribution Pipelines

The existing HIA apron fuel distribution system that provides fuel to each aircraft is a double line system with one line providing fuel to domestic bound aircraft and the second line providing fuel to foreign bound aircraft. These fuels must be isolated in accordance with U. S. Customs regulations. Therefore, a multiple line system is planned from separate pumping systems at the new facility. Connection with the existing main distribution lines will be done in a valve pit at the airport.

Although not specifically required to comply, these new pipeline will be designed and installed in accordance with United States Department of Transportation Regulations, Title 49, Part 195 - "Transportation of Hazardous Liquids by Pipeline". This is the only current regulation applicable. In accordance with this regulation, piping physical qualities and



PARTIAL DIKE SECTION
N.T.S.



PARTIAL TANK SECTION
NTS

AIRPORTS DIVISION
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HONOLULU INTERNATIONAL AIRPORT
ENVIRONMENTAL
IMPACT STATEMENT

Edward K. Noda
and
Associates, Inc.

SATELLITE FUELING FACILITY, PARTIAL DIKE AND TANK SECTIONS

FIGURE
IV-1

strengths are used and the pipe will be protected with an exterior coating and a cathodic system. In addition, all jet fuel piping has an interior epoxy coating.

Radiographic examination and hydrostatic testing will be used to confirm the acceptability of the pipelines construction and installation so that all applicable codes and standards will be met.

4. ARCHAEOLOGICAL/HISTORICAL/CULTURAL RESOURCES

4.1 EXISTING CONDITIONS

Three historic districts and 38 historic sites (which are not included within the districts) are located within the airport environs. These districts and sites are listed on both the Federal and State Registers of Historic Places. A complete listing of these districts and sites is provided in Table IV-2. Several additional individual sites of State significance are located within the airport environs, the majority of which are in the Hawaii Capital Historic District. There are no archaeological sites on the airport property. Nineteen sites have been identified in the airport environs, but most have been destroyed.

4.2 PROBABLE IMPACTS

There are no archaeological, historical or cultural sites of significance on the airport property or the properties to be acquired. Consequently there will be no direct impacts resulting from any of the proposed projects. There are five sites presently located within the 1987 60 L_{dn} noise curve. Three sites, the U.S. Immigration Office, the Kakaako Pumping Station and the Oahu Prison Administration Building, experience noise levels of approximately 60 L_{dn}. The fourth and fifth sites, Hickam Air Force Base and Fort Kamehameha are subjected to noise levels of 60 L_{dn} or greater. Based on the 1989 HIA Master Plan and Noise Compatibility Program projections, by the year 2005, the noise levels at all sites, with the exception of Hickam Air Force Base and Fort Kamehameha, would be reduced to below 60 L_{dn} and no new sites would be impacted.

TABLE IV-2

HISTORIC AND ARCHAEOLOGICAL SITES AND DISTRICTS IN THE FEDERAL AND STATE REGISTERS OF HISTORIC PLACES
(LOCATED WITHIN THE HIA ENVIRONS)

SITES AND DISTRICTS	LOCATION	REGISTER FEDERAL	REGISTER STATE
SITES			
Alexander & Baldwin Building	822 Bishop Street	X	X
Aloha Tower	Pier 9	X	X
Brass Foundry	899 Waimanu Street	E	
C. Brewer Building	827 Fort Street	X	X
Central Fire Station	104 S. Beretania Street	X	X
Dillingham Transportation Building	735 Bishop Street	X	X
Emerald Building	1150 Bishop Street		X
Falls of Clyde	Pier 7		X
Fort Kamehameha	Fort Kamehameha	E	E
Hawaii Building	1108 Fort Street Mall	E	
Hawaii Theater	1130 Bethel Street	X	
Hickam Air Force Base	Hickam Air Force Base	X	
Honolulu Academy of Arts	900 S. Beretania	X	
Hotel Street Sidewalk Elements	Hotel Street	E	
J. Campbell Building	1042 Fort Street	E	
Joseph W. Podmore Building	801 Alakea Street	X	X
Kakaako Pumping Station	653 Ala Moana Boulevard	X	X
Kalihi Fire Station	1742 N. King Street	X	X
Kamehameha V Post Office	Merchant & Bethel Streets	X	X
Kawaiahao Church	957 Punchbowl Street	X	X
McCorriston Building	1111 Fort Street Mall	E	
McKinley High School	1039 South King Street	X	X

TABLE IV-2

HISTORIC AND ARCHAEOLOGICAL SITES AND DISTRICTS IN THE FEDERAL AND STATE REGISTERS OF HISTORIC PLACES

(LOCATED WITHIN THE HIA ENVIRONS)

(Continued)

SITES AND DISTRICTS	LOCATION	REGISTER	
		FEDERAL	STATE
SITES (Continued)			
Oahu State Prison Administration Bldg.	2199 Kamehameha Highway	E	
Okiokilepe Pond	0.3 mil. NW of Iroquois Point	X	
Old Kakaako Fire Station	620 South Street	X	X
OR&L Office & Document Storage Building and Station	Corner of N. King Street & Iwilei Road	E	
Our Lady of Peace Cathedral	1183 Fort Street	X	X
Palama Fire Station	879 N. King Street	X	X
Pearl Harbor Naval Base	Pearl Harbor	X	
Portland Building	1111 Bishop Street	E	
Robinson Building	49 S. Hotel Street	E	
Royal Brewery	553 S. King Street	X	X
Tong Fat Company, Ltd.	1922 N. King Street	E	
Toyo Theater (Destroyed 1990)	1230 College Walk	E	
Thomas Square	Bounded by King St., S. Beretania St., Victoria St. and Ward Ave.	X	
U.S. Immigration Office	595 Ala Moana Boulevard	X	X
U.S.S. Arizona, Pearl Harbor	3 mi. south of Pearl City	X	

TABLE IV-2

HISTORIC AND ARCHAEOLOGICAL SITES AND DISTRICTS IN THE FEDERAL AND STATE REGISTERS OF HISTORIC PLACES

(LOCATED WITHIN THE HIA ENVIRONS)

(Continued)

SITES AND DISTRICTS	LOCATION	REGISTER	
		FEDERAL	STATE
DISTRICTS			
Chinatown Historic District	Bounded by Beretania St., Nuuanu St., Nuuanu Ave. and Honolulu Harbor	X	X
Hawaii Capital District	Bounded by Queen Emma, Vineyard, Miller, Beretania, Alapai, South, Kawaiahao, Mission Lane, Queen, Mililani, Merchant, Richards, Hotel and Alakea Sts.	X	X
Merchant Street Historic District	Downtown Honolulu	X	X
Oneula Archaeological District	Bounded by Fort Weaver Rd., Papipi Rd., and So. Hansen Rd.	X	X

Source: Hawaii State Historic Places Review Board, "Hawaii Register of Historic Places," 1979.

Note: E = Eligible for National Register

4.3 MITIGATION MEASURES

Because of the lack of expected impacts to archaeological/historical/cultural resources in the HIA area, measures to mitigate potential adverse impacts are not warranted.

5. SOCIOECONOMIC IMPACTS

5.1 EXISTING CONDITIONS

The socioeconomic characteristics of the airport area mirror the general socioeconomic characteristics of the City and County of Honolulu. The communities surrounding the airport are composed of a mix of residential (civilian and military), commercial and light industrial developments. Hickam Air Force Base and Pearl Harbor Naval Base are located on the western and northwestern boundaries of HIA while Keehi Lagoon and the mostly residential communities of Salt Lake, Aliamanu and Kalihi-Palama-Kapalama are located north, east and northeast of the airport. Keehi Lagoon and Mamala Bay form the southeastern and southern boundaries of the airport. The residential communities noted are characterized by a number of dense, single and multifamily developments. Historically, the Kalihi-Palama area has served as an entry community for low income immigrants to Hawaii. Although there are a few newer homes, the housing stock is quite old with many structures dating to around the 1940's. Many of the residentially zoned lots contain two or more dwelling units. The total population (1988) of the airport area, including Kalihi-Palama, Aliamanu/Salt Lake and Moanalua is estimated to be about 120,000 (DBED, 1989). This represents about 14.3 percent of the total island population.

The airport serves as the primary civilian economic generator in the immediate airport area. However, there are a number of small to medium sized commercial activities that are not aviation-related, but are significant contributors to the overall economic character of the airport area. Many of these businesses will be relocated as a result of the proposed projects. To the east of the airport, Honolulu Harbor is the major economic generator. Consequently, between the two activities, transportation, air and ship, provides the greatest employment and personal income in the area. Employment in the airport area, including neighboring Iwilei-Kalihi Kai is estimated to be about 90,000 persons (DBED, 1989).

5.2 PROBABLE IMPACTS

The socioeconomic characteristics of the airport area will be impacted by the following proposed projects:

- ITB Complex
- Expand Overseas Terminal, Diamond Head Concourse

- Relocate HIA Satellite Fuel Farm
- APM System and Supporting Facilities
- Acquire Land For Airport Use (Ualena Street)
- Construct New Air Cargo/Industrial Complex (Cargo City)
- Development of Kapalama Lands
- Relocate Lei Stands

The degree of impact significance on the socioeconomic characteristics of the HIA area by the various projects has been assessed on the basis of disruption of business due to relocation as well as the potential number of new jobs and resulting income generation.

The new ITB Complex, Diamond Head Concourse Expansion, APM System and Supporting Facilities, and Ualena Street Land Acquisition projects are expected to cause the greatest impacts to the existing socioeconomic characteristics of the area. The Ualena Street Land Acquisition project will require the relocation of ten businesses off site, employing 505 persons in a wide variety of jobs. These businesses presently generate about $66.9 million annually in gross sales and have an annual payroll of about $11.8 million. The ten businesses have about $5.2 million in improvements.

Twelve additional businesses will be relocated, but on site to the second and third levels of the Air Cargo/Industrial Complex. The twelve businesses employ about 350 persons, generate about $74.2 million in gross sales and have an annual payroll of about $74.3 million. The twelve businesses have about $1.5 million in improvements. The intent of the State is to relocate the tenants to permanent new locations. The new locations include existing industrial commercial areas on Oahu, such as the Halawa Valley Industrial Park, Campbell Industrial Park and the Kapalama Lands that the State has acquired. It is recognized by the State that relocation of businesses that have been established in one area for several years places hardships on the business as well as owners and employees of that business. Consequently, DOT-A will continue to expend considerable efforts in assisting the affected businesses in relocating to new sites.

The new ITB Complex, APM System and Support Facilities and Air Cargo/Industrial Complex are also expected to generate new jobs and increased income for both the workers and State in terms of personal income and gross receipts tax revenues. It has been estimated (Mathews, 1990) that during construction of the ITB Complex, approximately 1,500 men per day will be required during peak construction periods. The project is estimated to begin with about 250 total persons working eight hour shifts, five to six days per week. Further, it is estimated that about one-half of the over $730 million cost of the ITB Complex represents labor costs. That is, this one project would contribute about $400 million to construction worker incomes over the 20-year development period.

In addition to the above, State tax revenues are expected to increase from the sales of goods and services as well as from increased landing and airport fees paid by the airlines and tenants. Although the total amount of these increases cannot be predicted at this time, it is expected that the increases would be in the same percentages as the forecast increases in passenger and aircraft operations levels over present levels.

5.3 MITIGATION MEASURES

The majority of the socioeconomic impacts resulting from the proposed projects are expected to be positive and in the form of increased personal income and wages, increased numbers of job opportunities and increased tax and airport revenues. Mitigable negative impacts would arise from the relocation of existing businesses and the disruptions to those businesses.

As mentioned earlier, the existing Phase 1 tenants will be assisted in their relocation through a relocation assistance program setup by the State of Hawaii. This program will comply with all applicable State of Hawaii and Federal guidelines.

However, the Chevron property will be used for the relocation of certain tenants which have shown a need to be within proximity to the Downtown Honolulu District, the waterfront and/or HIA.

6. INFRASTRUCTURE AND PUBLIC UTILITIES

6.1 TRANSPORTATION FACILITIES

6.1.1 Highways and Public Access

6.1.1.1 Existing Conditions

All traffic entering HIA must use either H-1, Nimitz Highway or Elliot Street if coming from Hickam Air Force Base. H-1 and Nimitz/Kamehameha Highway are the two primary high-speed routes to the airport. Near the airport, H-1 is an elevated freeway that carries about 94,000 vehicles per day [Wilbur Smith Associates (WSA), 1990]. Nimitz/Kamehameha Highway runs at ground level below H-1 and carries between 30,000 to 40,000 vehicles per day in the vicinity of HIA (WSA, 1990). About 85 percent of the traffic bound to the airport passenger terminals uses H-1.

Based on State DOT traffic counts in August 1989, about 59 percent of the inbound vehicles destined to the airline passenger terminals came from the Diamond Head (east) direction and 41 percent came from the Ewa (west) direction. Outbound vehicles tended to have a higher orientation in the Diamond Head direction (71 percent) compared to the Ewa direction (29 percent). Average Weekday Daily Traffic (AWDT) flows in and out of the airport on H-1 are shown in Table IV-3.

The volume of traffic entering HIA is estimated to be over 32,000 vehicles per day which is almost twice the 1978 flow of 17,500 vehicles per day (vpd). In 1981 this flow was 23,900 vpd. The increases in traffic flow are a function of increased overseas visitors and interisland travel. The peak morning period begins at about 5:30 am and lasts until about 9:00 am, with the 6:30 to 7:30 am period having the highest one-hour morning peak traffic flows. The highest traffic flows at locations near the terminal occur at mid-day. It is generally accepted that the highest traffic flows are in August which represents the month with the highest number of visitors. During the month of August, about 130 percent of the average monthly visitors arrive at HIA (WSA, 1990).

TABLE IV-3

EXISTING VEHICLE TRIP DISTRIBUTION ON H-1

DIRECTION OF TRAVEL	AUGUST 1989[1] AVERAGE WEEKDAY TRAFFIC (vpd)	DIRECTIONAL SPLIT (%)
Outbound to Diamond Head	20,000	71
Outbound to Ewa	8,300	29
TOTAL OUTBOUND	28,300	100
Inbound from Diamond Head	16,700	59
Inbound from Ewa	11,400	41
TOTAL INBOUND	28,100	100

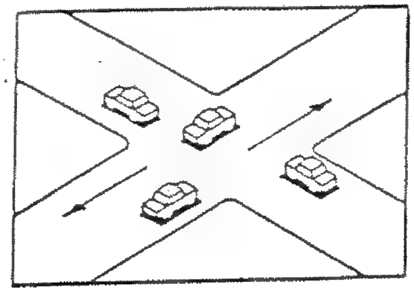
Source: WSA, 1990.

[1] State of Hawaii, Department of Transportation, includes only traffic on H-1 ramps.

On local streets, capacity of the roadway system is limited by the capacity at intersections. The intersection levels of service (LOS) concept (see Figure IV-2) has been used to assess traffic impacts at roadway intersections. Table IV-4 indicates present LOS levels at nine key intersections at HIA. Figure IV-3 indicates the fluctuations in daily traffic flows by day of the week. In this figure, traffic flows are shown by the day of the week as a percentage of the average daily traffic flow for a one-week period.

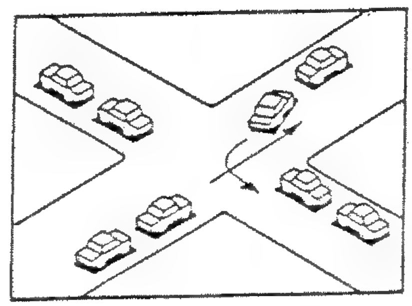
There are several areas where increased traffic could lead to a deterioration in traffic operations without improvements to the existing roadway system. The weaving section on Aolele Street between the H-1 off ramps and the entrance to the interisland terminal sometimes presents difficulties to drivers who need to change lanes twice. Similarly, it is difficult to return to the H-1 freeway from the junction of Aolele Street and the parking lot entrance to the existing interisland terminal without circulating through the main terminal.

LEVEL OF SERVICE "A" - V/C = 0 TO 0.60
Describes operations with very low delay, i.e., less than 5 seconds per vehicle. This occurs when signal progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all.

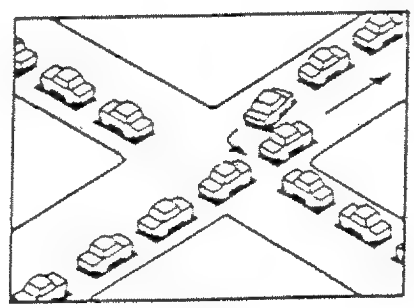

LOS 'A'

LEVEL OF SERVICE "B" - V/C = 0.61 TO 0.70
Describes operations with delays in the range of 5 to 15 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS "A", causing higher levels of average delay.

LEVEL OF SERVICE "C" - V/C = 0.71 TO 0.80
Describes operation with delay in the range of 15 to 25 seconds per vehicle. Occasionally vehicles may wait more than one red signal phase. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

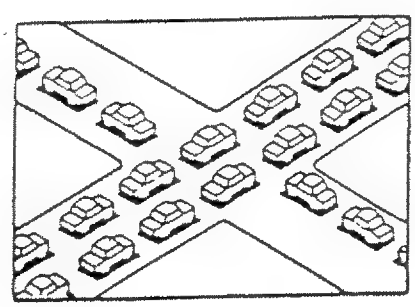

LOS 'C'

LEVEL OF SERVICE "D" - V/C = 0.81 TO 0.90
Describes operations with delay in the range of 25 to 40 seconds per vehicle. At LOS "D", the influence of congestion becomes more noticeable. Many vehicles stop, and the proportion of vehicles not stopping declines. Noticeable numbers of vehicles fail to clear signal during the first green phase.


LOS 'D'

LEVEL OF SERVICE "E" - V/C = 0.91 TO 1.00
Describes operations with delay in the range of 40 to 60 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Vehicles frequently fail to clear the signal during the first green phase.

LEVEL OF SERVICE "F" - V/C GREATER THAN 1.00
Describes operations with delay in excess of 60 seconds per vehicle. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection.


LOS 'F'

SOURCE: Highway Capacity Manual, 1985.

AIRPORTS DIVISION DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT	INTERSECTION LEVEL OF SERVICE CONCEPTS	FIGURE IV-2

TABLE IV-4

EXISTING INTERSECTION LEVELS OF SERVICE AND VOLUME:CAPACITY RATIOS

INTERSECTION	MORNING PEAK HOUR			AFTERNOON PEAK HOUR		
	VOLUMES[1]	V/C	LOS	VOLUMES[1]	V/C	LOS
Lagoon Drive/ Nimitz Highway	1,048	0.75	C	1,046	0.75	C
Lagoon Drive/ Aolele Street	672	0.43	A[2]	805	0.53	A[2]
Nimitz Highway/ Ohohia Street	505	0.36	A	718	0.51	A
Nimitz Highway/ Paiea Street	762	0.54	A	726	0.52	A
Nimitz Highway/ Rodgers Boulevard	455	0.33	A	569	0.41	A
Paiea Street/ Koapaka Street	950	0.68	B[2]	665	0.47	A[2]
Paiea Street/ Ualena Street	817	0.58	A[2]	722	0.52	A[2]
Paiea Street/ Aolele Street	1,024	0.73	C[2]	1,014	0.72	C[2]
Ohohia Street/ Ualena Street	Unsignalized		C[2]	Unsignalized		C[2]

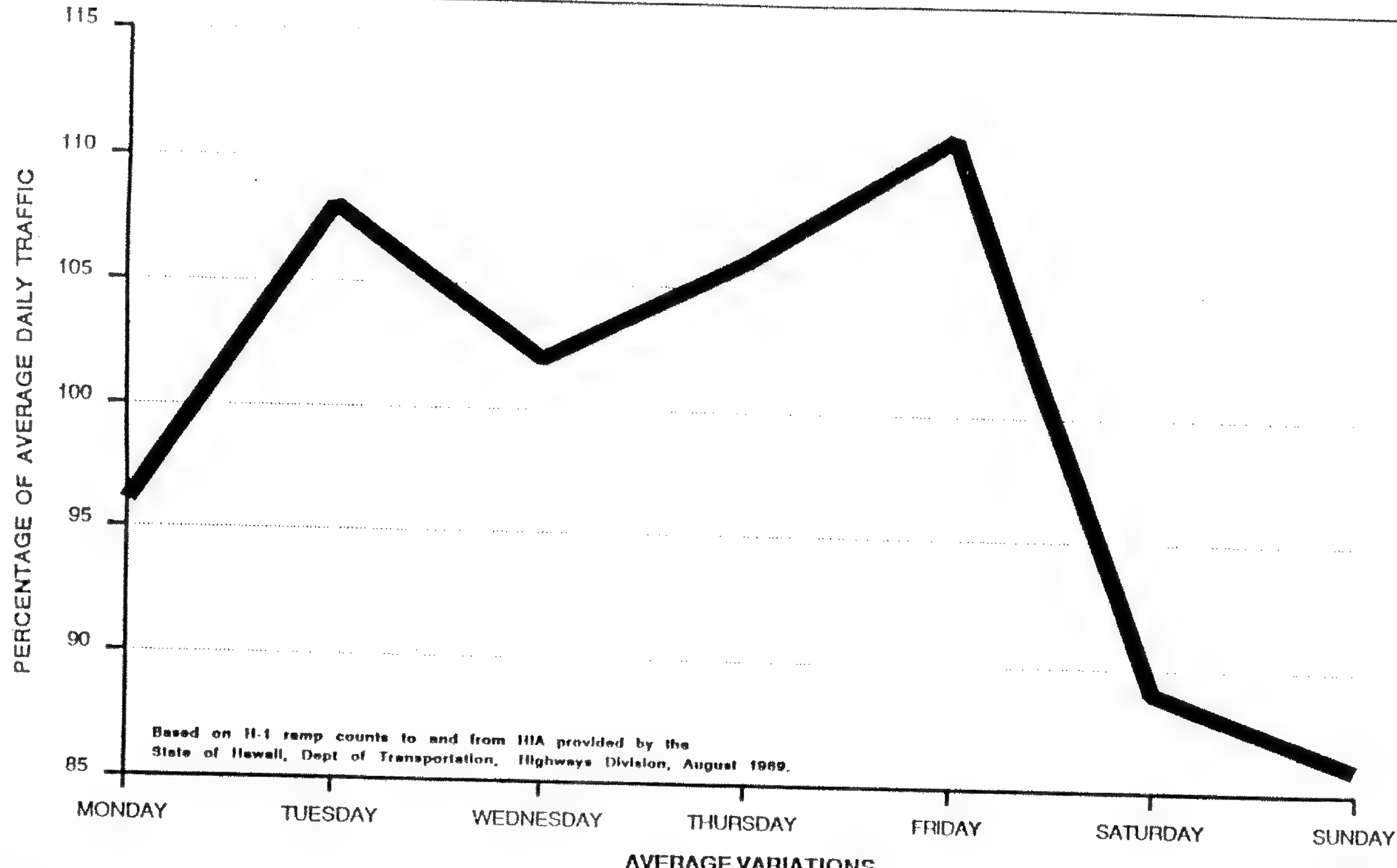
Source: WSA, 1990.

[1] Sum of Critical Volumes

[2] Current plans call for the signalization of these intersections.

V/C = Volume to Capacity Ratio

LOS = Level of Service (see Figure IV-2).



ARPRT-HO\ADTVARIA-3/1/90

AIRPORTS DIVISION DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT	Edward K. Noda and Associates, Inc.	VARIATIONS IN DAILY TRAFFIC BY DAY OF WEEK	FIGURE IV-3

6.1.1.2 Future Traffic Demand

Future traffic demand and patterns in the airport area will be impacted by the following proposed projects:

- ITB Complex
- Expand Overseas Terminal, Diamond Head Concourse
- Relocate HIA Satellite Fuel Farm
- APM System and Supporting Facilities
- Acquire Land For Airport Use (Ualena Street)
- Construct New Air Cargo/Industrial Complex (Cargo City)
- Development of Kapalama Lands
- Roadway Improvements and Parking Facilities
- Relocate Lei Stands
- Interisland Terminal, Mauka Pier Extension

The degree of impact significance on future traffic demands and patterns in the HIA area by the various projects has been assessed on the basis of the capacity of the surface streets to handle increased traffic that would result from the proposed projects as well as that which would result from forecast increased passenger and aircraft operations.

One of the key factors affecting future vehicle demand is the mode of travel that visitors choose when going to and from the airport. Table IV-5 shows the present estimated mode splits of airline passengers at each terminal. In addition to mode-split, it is also necessary to understand historical enplanements and overnight visitor patterns. The points listed below bear consideration during the analysis of future traffic patterns at HIA.

- Visitors from Japan and the Far East have been steadily rising and are increasing at a faster rate than other visitors;

- Currently a large percentage of visitors are associated with a travel firm that provides charter busses. It is anticipated that this pattern may shift, with more travellers shifting to rental cars;

TABLE IV-5

EXISTING MODE SPLIT

MODE	MODE SPLIT PERCENTS INTERISLAND TERMINAL	MAIN TERMINAL DOMESTIC	MAIN TERMINAL INTERNATIONAL
Passenger Car (including Taxi and Limo.)	53	35	28
Rental Car	19	26	6
Mini Bus/Shuttle Van	27	32	35
Tour Bus/Other Bus	1	7	31
TOTALS	100	100	100

Sources: WSA, August 1990.

- Overseas air travel between 1984 and 1989 increased by an average of 7 percent per year at HIA, or a 35 percent increase over the five-year period. Over the same period, interisland travel increased by 30 percent, or an average of about 6 percent per year.

Estimates of future traffic flows have been based on six predominant components as listed below.

- A portion of the increase would be attributable to a rise in interisland travel. It was estimated that air travel to the new interisland terminal would increase by about 20 percent by 1995 and by about 38 percent by year 2010. Although this component will result in increased traffic in and around HIA, the new interisland terminal is not part of this EIS because it was covered in the 1989 Environmental Assessment.

- Future travel demand would be related to increases in overseas, domestic travel. It has been projected (WSA, 1990) that this component of future air travel would increase by about 25 percent by 1995 and by 83 percent by the year 2010. Increases in traffic resulting from this component are partially reflected in the need to expand the Diamond Head Concourse.

- Future landside travel demand would be related to increases in the number of international flights and passenger levels. Projections were for a 56 percent increase, excluding transit trips by 1995 and a 182 percent increase by 2010. These increases reflect the need for construction of the ITB Complex.

- Increased air passenger throughput would increase the number of employees working at the airport and airport plans would relocate employee parking. A total of 2,500 new parking spaces for employees has been suggested for a new parking lot to be located at Aolele Street and Lagoon Drive. This would replace the current parking spaces located in the South Ramp area.

- The Ualena Street lands acquisition project and construction of the new Air Cargo/Industrial Complex and APM and Supporting Facilities, as well as other land use changes in and around the airport, would also result in an increase in future traffic. It has been estimated that about 30,400 daily trips would be generated by new development at the airport.

- Future vehicular travel causing increased traffic would be through vehicle trips without origins or destinations in the vicinity of the airport. Growth in through traffic on Nimitz Highway has been based on preliminary forecasts for the Hali 2005 model which projected a growth rate of about 1 percent per year, or about a 20 percent increase in through trips on Nimitz Highway by 2010. Although these trips will result in increased traffic in the HIA area, the trips are not related to any of the proposed projects covered by this EIS.

Vehicular trips to the main passenger terminal, new interisland terminal and ITB Complex are related to growth in future visitor arrivals. Current air-passenger projections (see Table I-4) are for an increase from 21.4 million passengers per year in 1989 to almost 37 million passengers in 2010, or almost a 73 percent increase. Future traffic demand in the HIA area will also be affected by the general population growth on Oahu as well as the development of other facilities in the vicinity of HIA, such as the Keehi Lagoon Recreation Plan. Traffic impacts of cumulative growth, as discussed in the next section, have been based on a traffic assignment of incremental growth, loaded onto a modified network of reassigned existing (1988) demand flows. These reassigned demand flows account for the

planned modifications in the roadway network. The incremental growth is shown in Table IV-6. The acquisition of Ualena Street will place Ualena Street, proper, under the jurisdiction of the State of Hawaii. The ownership of other roadways in the vicinity will remain unchanged.

TABLE IV-6

EXISTING AND FORECAST INBOUND TRAFFIC

FORECAST PERIOD	AM PEAK (vph)	MIDDAY PEAK (vph)	PM PEAK (vph)
Actual Existing	3,300	3,200	2,650
Forecast Existing	3,390	3,160	2,570
1995 FORECAST	4,190	3,930	3,200
Total New Trips	800	770	650
New Local Street Trips	240	230	200
2010 FORECAST	5,810	5,400	4,460
Total New Trips	2,420	2,240	1,890
New Local Street Trips	750	690	580

Source: WSA, 1990

6.1.1.3 Probable Impacts

Several planned and potential roadway improvements are being considered with both the airport expansion and other cumulative growth. For example, current airport planning calls for the closure of Aolele Street between Lagoon Drive and some point to the east of the new exit road from the ITB Complex and, as noted previously, a new employee parking facility is planned to be constructed at the present Aolele Street/Lagoon Drive intersection. The Department of Transportation, Airports Division, is in the process of planning for a direct freeway connection from the frontal roadway. Initial indications, are that the existing H-1 Freeway, Aolele Street on-ramps must be demolished for the construction of a frontal roadway - freeway ramp connection. The construction of the new connection and

realignment of the frontal roadway is scheduled to follow the relocation of the Satellite Fuel Farm. Initial plans indicate that the second level, and possibly the ground level, of the frontal roadway system would have direct access to the freeway. However, due to the timing of this EIS and the planning of this roadway project, no detailed studies are available at this time. This disclosure, in this EIS, is for informational purposes only and a supplemental Environmental document will be prepared and submitted.

As a result of two previous traffic studies for private developers, not related to the airport projects, (WSA, 1990 and Pacific Planning and Engineering, Inc., 1989), several roadway improvements are considered as part of the base roadway in 1995. These roadway improvements are as follows:

- On Paiea Street between Nimitz Highway and Koapaka Street, construct and restripe for two new lanes; a new southbound lane which would end as a right-turn only lane at Koapaka Street and a new northbound lane which would end as a right-turn only lane at Nimitz Highway.

- Restripe Nimitz Highway in the westbound direction at Paiea Street to provide a second left-turn lane.

- Signalize three intersections on Paiea Street:

  Ualena Street/Paiea Street
  Koapaka Street/Paiea Street
  Aolele Street/Paiea Street

- Restrict parking on both sides of Koapaka Street between Paiea Street and the nearest proposed driveway of the Airport Trade Center project. Restripe the outbound lanes to provide two lanes: an exclusive left-turn lane and a shared right-through lane.

- At Paiea Street and Ualena Street, restripe both directions of Ualena Street to provide two approach lanes (one left-turn and one through/right-turn lane) and one departure lane.

- At Paiea Street and Aolele Street, restripe the Diamond Head (eastbound) approach of Aolele Street to provide a second left-turn lane onto northbound Paiea Street, and restripe Paiea Street to provide a second southbound approach lane to Aolele Street.

The Keehi Lagoon Recreation Plan recommended additional roadway improvements and forecast increased traffic volumes within the airport vicinity. The recommended roadway improvements were not included in the 1995 base roadway network. However, the increased traffic generated by this project, except for the triangle development, were included in the 1995 traffic demand.

The roadway improvements and the traffic volumes associated with the triangle development were included in the 2010 roadway analysis. The scenario from the Keehi Lagoon Recreation Plan represents the maximum development of the triangle area and the "worst case" traffic impacts. The roadway improvements, from the Keehi Lagoon Recreation Plan, implemented in the 2010 roadway analysis are as follows:

<u>Triangle Bridge</u>

1. Provide a single bridge four lanes wide to Lagoon Drive to serve the anticipated intensity of development.

<u>Lagoon Drive - Nimitz Highway Intersection</u>

1. Add a second mauka direction right-turn lane; and
2. Add a makai direction through lane to the Puuloa Road leg.

<u>Lagoon Drive Intersections with Koapaka and Ualena Street and Waiwai Loop</u>

1. Restrict the mauka end of Waiwai Loop to right-turn-in/right-turn-out movement;
2. Prohibit left-turns from Koapaka Street;
3. Remove parking on Ualena Street and makai leg of Waiwai Loop approaches to provide separate right-turn lanes; and
4. Remove parking from Lagoon Drive between Koapaka and Ualena Streets to improve traffic flow and provide right-turn lane to Ualena Street.

Lagoon Drive Intersection with Aolele Street

1. Install traffic signal; and

2. Add left-turn lanes to all four approaches.

Aolele Street - To accommodate the Keehi Lagoon project, it was proposed that Aolele Street be widened to four lanes from Lagoon Drive to the H-1 Freeway ramps; however, the anticipated closure of Aolele Street by the airport expansion would preclude this option. Alternative improvements would likely be necessary to accommodate cumulative traffic flows.

The expected 1995 through 2010 traffic impacts resulting from the projects covered under this EIS are shown in Tables IV-7 and IV-8. The analyses performed indicate that the increases in traffic flows, related to both background traffic growth and increased traffic at HIA, would result in an overall decline in intersection LOS. The intersection of Nimitz Highway and Lagoon Drive would be noticeably impacted by 2010, even with the proposed roadway improvements described above.

6.1.1.4 Mitigation Measures

As noted, traffic conditions with the airport expansion projects and with other cumulative development in the HIA area, would result in significant declines in LOS if additional transportation improvements are not implemented. One of the most important roadway improvements would be to provide access to the H-1 on-ramps on Aolele for traffic generated from the Lagoon Drive area. In addition, the timely establishment of a rapid transit system would serve to reduce some of the passenger car traffic on Nimitz Highway and surrounding streets. Several other potential mitigation measures have been proposed and are described in detail in the traffic study. Two of the measures under consideration at this time are:

- Provide selected intersections and roadway improvements, including widening, at critical locations along Lagoon Drive, Puuloa Road and Nimitz Highway; and

TABLE IV-7

INTERSECTION LEVELS OF SERVICE
YEAR 1995 WITH BASE FUTURE NETWORK

INTERSECTION	MORNING PEAK HOUR			AFTERNOON PEAK HOUR		
	SCV[1]	V/C	LOS	SCV[1]	V/C	LOS
Nimitz Highway/ Lagoon Drive	1,331	0.95	E	1,599	1.14	F
Lagoon Drive/ Aolele Street	359	0.24	A	724	0.52	A
Nimitz Highway/ Ohohia Street	689	0.49	A	834	0.60	A/B
Nimitz Highway/ Paiea Street	1,153	0.82	D	1,097	0.78	C
Nimitz Highway/ Rodgers Boulevard	982	0.70	B/C	836	0.60	A/B
Paiea Street/ Ualena Street	1,330	0.95	E	1,206	0.86	D
Ualena Street/ Lagoon Drive	1,054	0.75	C	1,123	0.80	C/D
Paiea Street/ Aolele Street	1,405	1.00	E/F	1,446	1.03	F
Nimitz Frontage/ Ohohia Street	328	0.23	A	424	0.30	A
Nimitz Frontage/ Paiea Street	1,305	0.93	E	1,200	0.86	D
Nimitz Frontage/ Rodgers Blvd.	288	0.21	A	264	0.19	A

Source: WSA, 1990.
1 Sum of Critical Volumes
2 Current plans call for the signalization of these intersections.
V/C = Volume to Capacity Ratio
LOS = Level of Service (see Figure IV-2).
Note: These intersections will be restudied in the on-going traffic study for the closure of Aolele Street and freeway on-ramps.

TABLE IV-8

INTERSECTION LEVELS OF SERVICE
YEAR 2010 WITH BASE FUTURE NETWORK

INTERSECTION	MORNING PEAK HOUR			AFTERNOON PEAK HOUR		
	SCV[1]	V/C	LOS	SCV[1]	V/C	LOS
Nimitz Highway/ Lagoon Drive	1,695	1.21	F	1,920	1.37	F
Lagoon Drive/ Aolele Street	1,241	0.89	D	1,317	0.94	E
Nimitz Highway/ Ohohia Street	925	0.66	B	957	0.68	B
Nimitz Highway/ Paiea Street	1,454	1.04	F	1,336	0.95	E
Nimitz Highway/ Rogers Boulevard	1,360	0.97	E	1,097	0.78	C
Paiea Street/ Ualena Street	1,609	1.15	F	1,360	0.97	D
Ualena Street/ Lagoon Drive	1,154	0.82	D	1,152	0.82	D
Paiea Street/ Aolele Street	1,591	1.14	F/F	1,602	1.14	F
Nimitz Frontage/ Ohohia Street	373	0.27	A	463	0.33	A
Nimitz Frontage/ Paiea Street	1,445	1.03	F	1,342	0.96	E
Nimitz Frontage/ Rodgers Blvd.	523	0.37	A	470	0.34	A

Source: WSA, 1990.

1 Sum of Critical Volumes

2 Current plans call for the signalization of these intersections.

V/C = Volume to Capacity Ratio

LOS = Level of Service (see Figure IV-2).

Note: These intersections will be restudied in the on-going traffic study for the closure of Aolele Street and freeway on-ramps.

- Modify Nimitz Highway to add one lane in each direction between the Lagoon Drive intersection and the Pearl Harbor Interchange.

6.1.2 Harbor Facilities

6.1.2.1 Existing Conditions

Honolulu Harbor, adjacent to and landward of Keehi Lagoon, is the major commercial port in Hawaii. None of the proposed projects will impact existing and/or planned harbor facilities. Existing harbor facilities are adequate and capable of handling any materials for the projects that may be shipped into the harbor.

6.1.2.2 Probable Impacts

The proposed projects are not expected to significantly impact current harbor facilities or capabilities. It is likely that some of the building materials for the proposed projects will be shipped through the harbor. However, these materials would constitute a very small percentage of the total amount of goods handled by the harbor and would not cause any significant primary or secondary impacts to the harbor facilities or capabilities.

6.1.2.3 Mitigation Measures

Because of the lack of adverse impacts to harbor facilities and capabilities, measures to minimize potential adverse impacts are not warranted.

6.2 CLIMATE, METEOROLOGY AND AIR QUALITY

6.2.1 Existing Conditions

The climate of the HIA area is fairly typical of the southern, leeward coast of Oahu. The mean annual rainfall is about 23 inches and, generally, northeast trade winds 5 to 20 miles per hour predominate. The mean annual temperature is approximately 75 degrees F with seasonal fluctuations rarely exceeding ± 10 degrees F. Greater variations in temperature occur from changes in elevation. The warmest months are August and

September, while the coolest months are January and February. Daily maximum temperatures at HIA run from the high 70's in winter to the mid-80's in summer.

The air quality of the HIA area has been studied in some detail over the past twenty years (for example see Morrow, 1980 and 1987; Ralph M. Parsons Company, 1974; Libby, 1976). An air quality impact analysis specifically prepared for this EIS has been prepared and is included as an appendix hereto. The following is primarily a brief summary of that analysis. Also prepared specifically for the project was an air quality impact study of the Automated People Mover System (Neal & Assoc., 1990). Where appropriate, conclusions of the APM study supplement those of Appendix A in the discussion below.

6.2.2 Probable Impacts

Short-term impacts, those associated with construction activities on all projects, except the acquisition of land, will result from emissions from construction equipment and workers' vehicles and fugitive dust generated during mobilization, demolition and construction activities, particularly site grading. These impacts will be localized, transient and temporary.

Long-term impacts include primarily the effects of aircraft emissions, vehicular traffic to and from the airport, and refueling operations. The combined effects of these sources were predicted for the years 1989, 2000, and 2010.

Predicted SO_2, NO_2 and TSP concentrations are well below allowable standards, and the contribution of airport sources to the totals for these pollutants is relatively small. Because the federal annual and 24-hour PM-10 standards are very similar to the State TSP standards, it is expected that PM-10 concentrations will also be below federal standards. Expansion of the airport is projected to produce small SO_2, NO_2, and particulate increases. (See Table 4-3, Appendix A, for quantative values).

Carbon monoxide concentrations for both 1-hour and 8-hour averaging times are predicted to be below the State and federal standards in all analysis years, however, locally higher CO concentrations (CO "hotspots") are possible in areas of congested traffic. The traffic analysis indicated that in 2010 the worst intersection in terms of level of service would

be Lagoon Drive and Nimitz Highway. A previous study (Root, 1989) indicated that exceedances of State CO standards are probably occurring at that intersection at the present time and will likely continue in future years.

No photochemical modeling to predict the impact of expanded airport operations on ozone concentrations was conducted, however, NO_2 and hydrocarbon emissions (which are precursors to ozone formation) are expected to increase over the next 20 years. Since exceedances of the State ozone standard have been recorded in the past, it would be reasonable to assume that airport emissions now and in future years would contribute to additional violations. The prevailing winds, however, will transport these emissions seaward approximately 90 percent of the time, rather than toward populated areas.

Construction and operation of the APM System will have a definite positive effect on air quality within the airport area in that emissions from the Wiki Wiki bus system will be reduced by at least 80 percent. Indirect emissions that will occur offsite at power generating facilities as a consequence of supplying electricity to the APM System will be insignificant.

6.2.3 Mitigation Measures

Mitigation measures intended to minimize construction impacts from workers' cars and construction equipment, as well as from earth moving operations, include the following:

- Minimize the number of concurrent construction/grading or equipment-intensive projects at any given time
- Minimize simultaneous operation of multiple fuel burning construction equipment units
- Utilize electrical construction equipment (e.g., welders) where possible
- Use catalytic reduction for gasoline-powered equipment
- Apply injection timing retard to diesel-powered equipment

- Water construction areas to minimize fugitive dust

- Cover open-bodied trucks transporting materials likely to generate airborne dust

- Pave parking areas and establish landscaping as quickly as possible after grading.

The below listed measures will aid in mitigation of the impacts associated with airport-associated traffic:

- Encourage ride-sharing or use of public transportation by employees

- Limit the number of passenger parking spaces to promote the use of shuttle services and public transportation

- Discourage idling vehicles at dropoff points

- Implement traffic improvement measures such as traffic flow improvements (i.e., proper signalization, road widening) for intersections with poor level of service ratings

Aircraft operations emit the largest proportion of all airport pollutants. One obvious way to reduce air pollutants from aircraft is to encourage the airlines to use airplanes with more efficient engines. Such a requirement, while difficult to implement, is possible. Another way to minimize emissions would be to spread operations throughout the day so that fewer aircraft take off in the peak hour. However, the available data indicate that HIA is utilized at a fairly high rate throughout the daylight hours, so it is unlikely that schedule shifting will create a significant decrease in maximum emissions. The third principal method of reducing aircraft emissions would be to reduce total aircraft operations. This could be accomplished by requiring that commercial aircraft have a minimum occupancy (70 percent, for example) or setting a minimum passenger carrying capacity for planes using the facility.

The use of more efficient engines and achieving higher occupancy rates may become practical for reasons other than those related to air quality. If the price of oil remains high

or increases, economic considerations may force implementation of these measures, resulting in incidental air quality benefits.

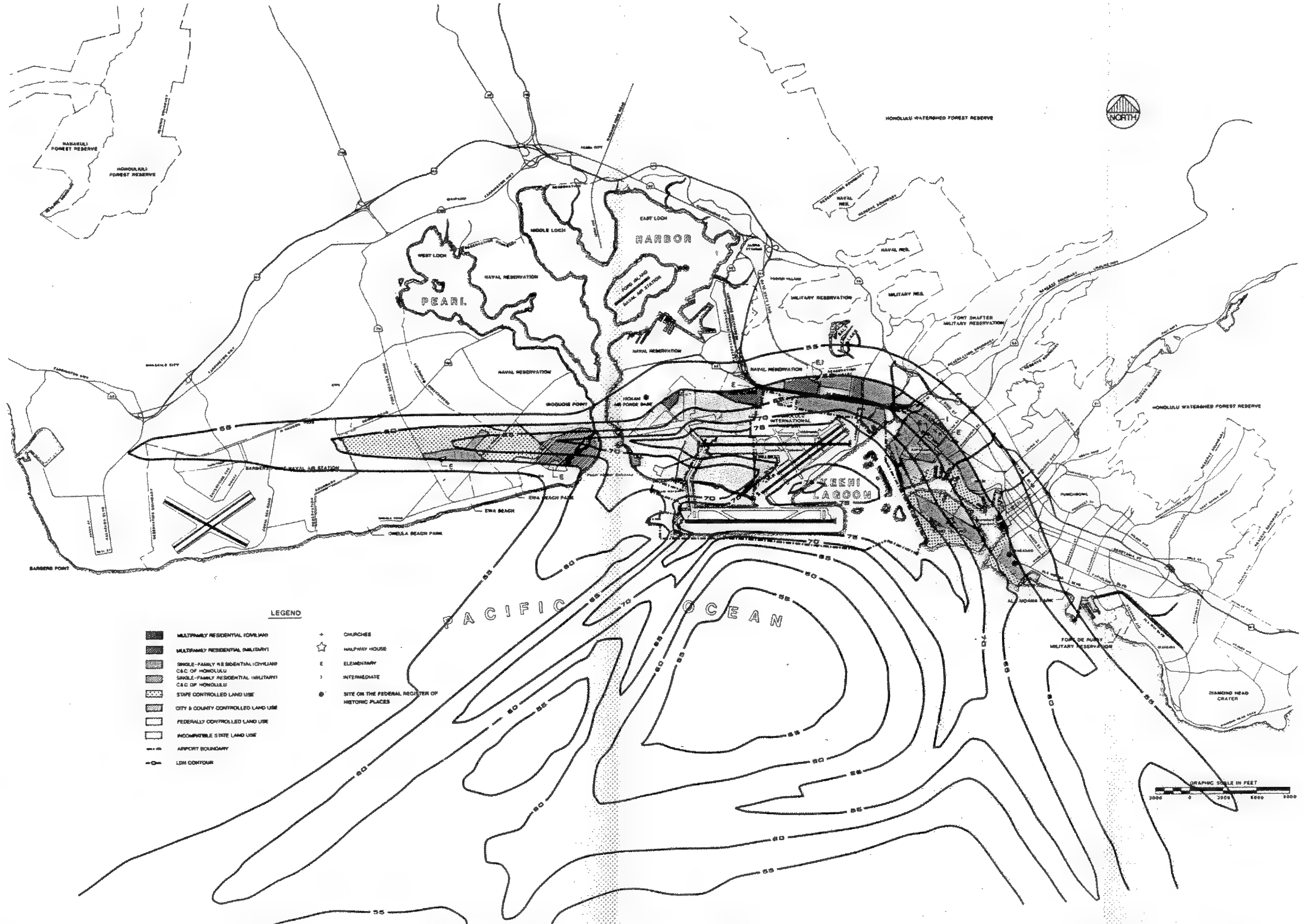
6.3 NOISE

6.3.1 Existing Conditions

Ambient noise levels in the vicinity of HIA are driven by aircraft generated noise. This source of noise has been the subject of a Federal Aviation Administration FAR Part 150 Noise Compatibility Program (Edward K. Noda & Assoc., 1989). A noise exposure analysis for HIA and environs indicates that noise levels within the airport boundaries vary from greater than 85 L_{dn} to 70 L_{dn} (Figure IV-4). The L_{dn}, or day night sound level noise descriptor, represents the equivalent A- weighted sound level, in decibels, during a yearly average 24-hour day. A 10 dBA human reaction correction factor is added to each equivalent sound level to reflect the greater impact of noise during nighttime periods (10:00 pm to 7:00 am). Based on the noise analyses that have been conducted at HIA, a noise reduction of about 5 L_{dn} is expected between 1992 and 2007 due to quieter aircraft and more efficient operating and management procedures.

The U.S. Department of Housing and Urban Development (HUD) has established a land use compatibility matrix that sets an exterior average annual noise level of 80 L_{dn} as the noise level that should not be exceeded in commercial/light industrial areas to protect public health and welfare. For residential areas, a noise level of 65 L_{dn} or less is preferred and for water recreational areas, such as Keehi Lagoon, a level of 70 L_{dn} or less is acceptable. It is noted that the State has established its own noise guidelines that call for noise levels of 60 L_{dn} or less for residential areas.

Ebisu & Associates (1990) completed a specific study of the noise and vibration impacts associated with implementation of the APM System. Noise levels from the Wiki Wiki bus tractors as well as from the smaller shuttle buses were measured. The loudest noises from the present system were caused by the compressed air releases during Wiki Wiki bus braking and operation of doors. The following conclusions were possible, with all outside sound levels measured at 25 feet distance from the buses:



NOTE:

LAND USE AUTHORITY RESTS WITH THE CITY & COUNTY OF HONOLULU DEPARTMENT OF LAND AND UTILIZATION AND DEPARTMENT OF GENERAL PLANNING, AND ALSO STATE OF HAWAII LAND USE COMMISSION, AS WELL AS DEPARTMENT OF LAND AND NATURAL RESOURCES, (FOR CONSERVATION DISTRICTS ONLY)

AIRPORTS DIVISION DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT	Edward K. Noda and Associates, Inc.	1987 AIRPORT NOISE CONTOURS	FIGURE IV-4

- Outside noise from the Wiki Wiki buses were associated with the tractor vehicles, which were approximately 71 dB (Leq) during idling; 82 dB (Lmax) during cruise; 81 dB (Lmax) during deceleration; and 83 dB (Lmax) during acceleration.

- The average difference between the maximum (Lmax) and integrated (Lse) sound levels during acceleration, deceleration, and cruise conditions was approximately 6.6 dB for the Wiki Wiki buses.

- The loudest noise events associated with the Wiki Wiki buses were the compressed air releases during vehicle braking and operation of the doors. These short duration noise events ranged from 90 to 102 dB (Lmax).

- The small "SBus" shuttle was approximately 4 dB quieter than the larger transit vehicles during idle, and approximately 12 dB quieter during other operations. Also, the noise from compressed air releases did not occur from these shuttle buses.

Hourly noise levels associated with larger Wiki Wiki buses were estimated to range from 55 to 59 dB (Leq) at 25 feet separation distance with the compressed air releases excluded from the noise measurements. Inclusion of noise from the compressed air releases added approximately 18 dB to the noise levels at the Wiki Wiki bus stops. Hourly noise levels associated with the small shuttle buses were estimated to range from 47 to 49 dB (Leq) at 25 feet separation distance.

The total daily movements and their daytime/nighttime splits along the various routes were not available. However, based on the measured single event noise levels plus spot hourly counts of the Wiki Wiki bus and shuttle movements, it was concluded that the noise from the Wiki Wiki buses along the routes probably do not exceed 65 Ldn at 25 feet separation distance, except at those bus stations where compressed air releases occur. Along the small shuttle bus routes, noise levels probably do not exceed 55 Ldn at 25 feet separation distance. These levels are relatively low when compared to existing noise levels from aircraft noise sources within the airport complex.

The airport area is also subjected to traffic noise, especially along the Nimitz Highway corridor and from the elevated section of H-1 that passes through the HIA area. According to a traffic noise study prepared for the Office of State Planning (Helber, Hastert & Kimura Planners, et al., 1989), the Nimitz Highway corridor causes maximum hourly noise levels of 65 dBA at a distance of 250 to 300 feet from the centerline of the roadway. During evening periods, when traffic volumes decrease by about one-third, average hourly noise levels decrease to approximately 60 dBA.

6.3.2 Probable Impacts

The existing noise characteristics of the airport area have the potential to be impacted by all of the proposed projects:

The degree of impact significance on the noise characteristics of the HIA area by the various projects has been assessed on the basis of facilities either being located within areas subjected to noise levels that exceed federal or State standards or the ability of a given project to reduce the overall HIA noise levels or relocate existing noise sources to other areas, thereby decreasing noise level in a more sensitive area, e.g., the Engine Runup Pad.

In general, the majority of the proposed projects will not, in themselves, cause any changes in the present or future noise in the HIA area. However, some of the projects, such as the above cited Engine Runup Pad, will be relocating present noise sources to areas less sensitive to aircraft noise, i.e., away from inhabited structures. Other projects, e.g., the Kapalama Lands Development, could cause an increase in hourly noise levels by increasing the light industrial activity in the area. The change in tenant mix along Ualena Street could occasionally increase nighttime noise levels. However, increased activities are not expected to cause significant increases in noise levels in that new activities would have to comply federal and State noise regulations. In some cases, increased traffic noise, resulting from increased aircraft operations and passenger levels, will be relocated from one area of the airport to another, e.g. the ITB Complex and Roadway Improvement, Parking Facilities projects. Traffic noise in the main terminal area due to international arrivals and departures may decrease when the new ITB Complex is operational, but traffic noise in the vicinity of the new ITB Complex will be increased. Overall, noise levels in the vicinity of the airport are expected to decrease due to the use of quieter aircraft and more efficient aircraft operations and management procedures.

Increased traffic noise due to increased aircraft operations and passenger levels are expected to occur in all HIA terminal areas. However, these increased noise levels are expected to be less than aircraft generated noise levels and would only affect the area in the immediate vicinity of the roadways. There will be short-term increases in noise levels due to construction activities with noise levels in different areas of the airport increasing or decreasing depending on the level of construction activity. Typical construction activity noise levels (excluding pile driving) are shown in Figure IV-5. The impulsive noise levels of impact pile drivers are approximately 15 dB higher than the levels shown in Figure IV-5, while the intermittent noise levels of vibratory pile drivers are at the upper end of the noise level ranges depicted in the figure.

The maximum allowable noise and vibration characteristics of the future APM vehicles will be specified within the project's Request for Proposal (RFP). From the APM noise level requirements included in the draft RFP and the measurements of Wiki Wiki bus noise, the following conclusions are possible:

- The existing Wiki Wiki buses are at least 6 to 8 dB noisier than the proposed APM transit vehicles during cruise, acceleration or deceleration.

- During curbside idle, both the Wiki Wiki buses and the APM vehicles have similar noise levels.

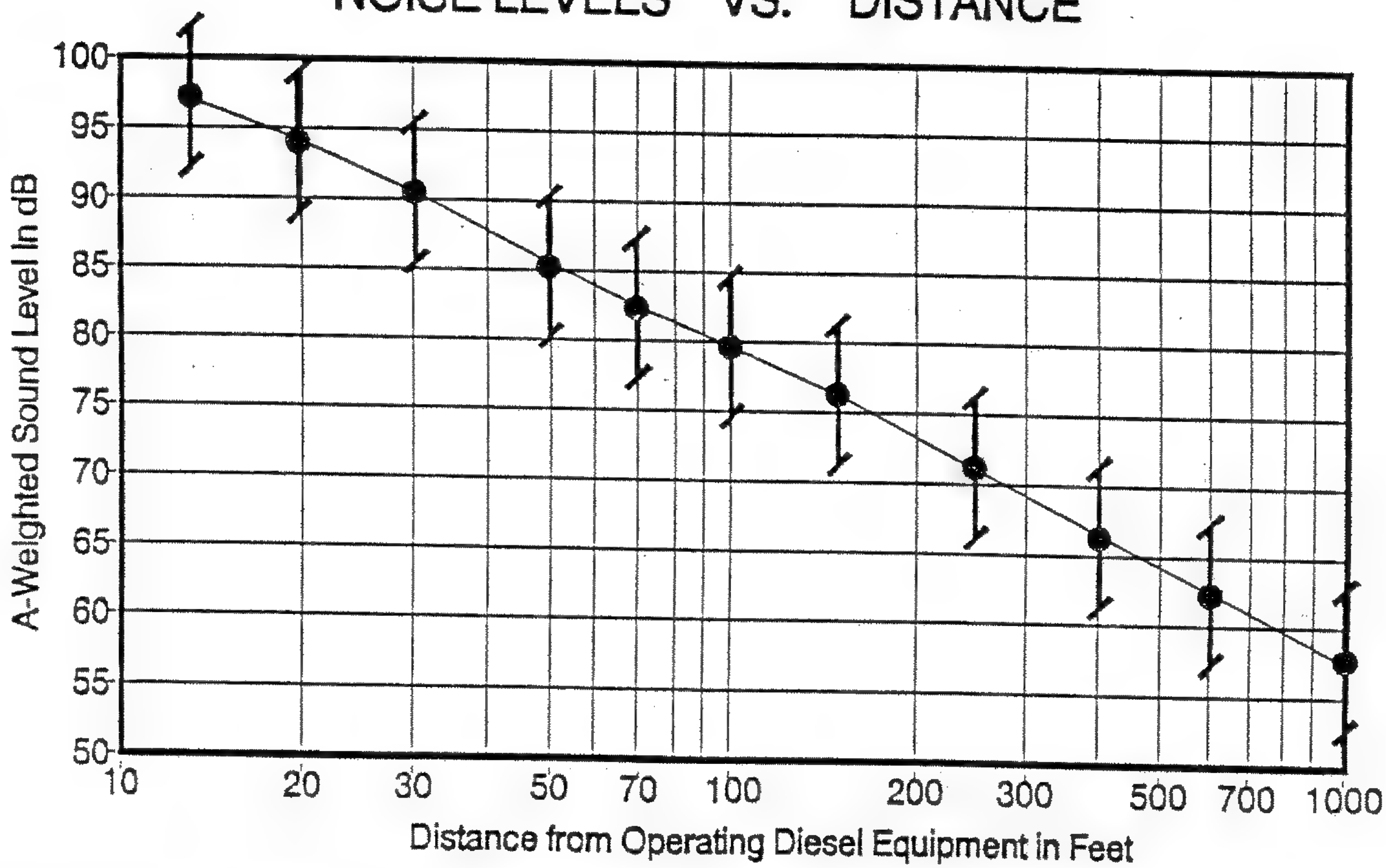
- The compressed air release noise associated with the Wiki Wiki buses will not be present from the APM vehicles. This is a significantly quieter (by 18 dB) feature of the APM vehicles during braking and passenger door operations.

- The small Wiki Wiki shuttle buses are as quiet or slightly quieter than the proposed APM transit vehicles.

- The interior noise levels of the APM vehicles are expected to be 6 to 12 dB quieter than those within the Wiki Wiki buses.

Although the APM vehicles are expected to be much quieter than the existing Wiki Wiki buses, more trips are expected to be conducted by the new transit vehicles. In order to describe the expected exterior noise levels associated with the proposed PAL-1 and PAL-

ANTICIPATED RANGE OF CONSTRUCTION NOISE LEVELS VS. DISTANCE



AIRPORTS DIVISION
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HONOLULU INTERNATIONAL AIRPORT
ENVIRONMENTAL
IMPACT STATEMENT

Edward K. Noda and Associates, Inc.

CONSTRUCTION NOISE LEVELS

FIGURE IV-5

2 configurations of the APM System, Ldn vs. distance curves were developed at key sections of the proposed guideway system. The following conclusions are possible:

- Typical noise levels at 50 feet distance from the centerlines of the APM guideways are expected to range from 60 to 65 Ldn.

- Minimum and maximum Ldn levels at 50 feet distance from the guideway centerlines are predicted to be 51 Ldn and 67 Ldn, respectively.

- Generally, increases in Day-Night Sound Level of 3 to 4 decibels are predicted to occur along the guideways during the transition from PAL-1 to PAL-2.

- Predicted Ldn levels along the APM guideways are expected to be compatible with airport activities.

- Because the APM stations are expected to be air conditioned, with sliding glass doors separating the waiting areas from the guideways, noise levels within the waiting areas of the APM stations are not expected to exceed 57 dB with the station doors closed.

Noise impacts and tenant complaints associated with the proposed APM System are not expected to occur due to the planned configuration and locations of the guideways in relationship to the airport terminals. In addition, predicted Ldn levels from the APM System are not excessive for the types of commercial activities normally undertaken at the airport complex. Closure and air conditioning of the majority of the occupied spaces which front the guideways is also the normal and expected condition, and exterior noise from both aircraft and APM vehicle sources are expected to be attenuated by a minimum of 20 dB within these air conditioned spaces.

The only area of potential noise impact to the community from the proposed APM System is at the northeast end of the Diamond Head Loop. The distances from the future guideway to the final airport property boundary line and the zoning of the adjoining property could not be determined because the State is currently considering acquiring additional property that is directly mauka of Aolele Street. If State Department of Health

noise limits are not exceeded at the airport property line, adverse noise impacts from the APM System and complaint risks from neighboring property owners will also be minimized.

6.3.3 Mitigation Measures

The increases in traffic noise attributable to the proposed projects will be difficult to perceive over the 20-year development period. As noted previously, aircraft generated noise levels are predicted to decrease with the introduction of quieter (Stage 3) aircraft into the aircraft fleet, as well as improved and more efficient operations and management procedures. The airlines are required to use Stage 3 aircraft (presently the quietest aircraft group) by the year 2000.

Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50-foot distance), and to the exterior nature of the work. The use of properly muffled equipment will be required for all projects and, to the maximum extent possible, construction activity, especially in noise sensitive areas, will comply with State Department of Health guidelines. However, a variance from the Department of Health curfew periods for noisy construction activities should be considered since it may shorten the total construction period and thereby lessen the cumulative noise exposure period of tenants in the adjoining buildings within the airport complex.

Noise mitigation measures in the form of total closure with automatic, sliding glass doors; CMU or concrete wall and floor construction; suspended acoustical ceilings; carpeting; and thick, laminated, glazing are planned for use within the waiting areas of the APM transit stations. These should be more than adequate to maintain interior noise levels to less than 60 Ldn with the sliding doors closed.

Outside the stations' waiting areas, the use of absorptive ceiling panels such as perforated metal panels or aluminum slats above the station platform area would be useful in minimizing reverberant sound buildup within the immediate vicinity.

Within the airport terminal areas, the use of exterior concrete or CMU walls with 9/32 inch thick laminated glass should be sufficient to attenuate APM vehicle noise during

passbys as close as 25 feet from the transit vehicles. Because this type of construction is normally used at the airport complex for its enclosed terminal areas, additional or extraordinary noise mitigation measures for the APM System should not be required.

6.4 WATER SUPPLY

6.4.1 Existing Conditions

Existing and future demands for potable water have been studied during the conduct of a utilities evaluation for the airport, which is included as an appendix to this EIS. The following briefly summarizes the water supply information contained in that report.

Potable water for HIA is obtained through a 24-inch diameter City and County of Honolulu Board of Water Supply (BWS) main that is located along Nimitz Highway. Three 16-inch mains, connected to the 24-inch main, serve HIA and run along Lagoon Drive, Rodgers Boulevard and Paiea Street. Flows are measured by three 8-inch turbine meters (Lagoon Master Meter, Aolele Master Meter and Paiea Master Meter). The three 16-inch mains are interconnected by another 16-inch line that runs along Aolele Street. The major portion of the developed portion of HIA is now served by 16-inch and 12-inch mains that complete the water supply loop system. Future improvements to the existing water supply lines include extension of the 16-inch main along Lagoon Drive to serve the South Ramp area. The existing and future water system for HIA is shown on Figure IV-6.

Current consumption for HIA is approximately 1.8 million gallons per day (mgd). The most significant variable affecting water usage at the airport is passenger volume. Historical data indicate that the HIA terminals use about 15 gallons per passenger per day (gppd). In addition, HIA water consumption includes 0.14 mgd for passenger insensitive activities, 0.191 mgd of water loss and 0.60 mgd for use by Hickam Air Force Base. Total consumption for 1988, including terminal usage, passenger insensitive activities and the water loss was 460 million gallons (mg) and the total passenger traffic for that year was 22 million. Based on the total consumption and passenger level, the average consumption was approximately 21 gppd. In addition to the use of potable water for passenger and other purposes, approximately 100,000 gpd of non-potable water is used for airport irrigation purposes.

- Outside noise from the Wiki Wiki buses were associated with the tractor vehicles, which were approximately 71 dB (Leq) during idling; 82 dB (Lmax) during cruise; 81 dB (Lmax) during deceleration; and 83 dB (Lmax) during acceleration.

- The average difference between the maximum (Lmax) and integrated (Lse) sound levels during acceleration, deceleration, and cruise conditions was approximately 6.6 dB for the Wiki Wiki buses.

- The loudest noise events associated with the Wiki Wiki buses were the compressed air releases during vehicle braking and operation of the doors. These short duration noise events ranged from 90 to 102 dB (Lmax).

- The small "SBus" shuttle was approximately 4 dB quieter than the larger transit vehicles during idle, and approximately 12 dB quieter during other operations. Also, the noise from compressed air releases did not occur from these shuttle buses.

Hourly noise levels associated with larger Wiki Wiki buses were estimated to range from 55 to 59 dB (Leq) at 25 feet separation distance with the compressed air releases excluded from the noise measurements. Inclusion of noise from the compressed air releases added approximately 18 dB to the noise levels at the Wiki Wiki bus stops. Hourly noise levels associated with the small shuttle buses were estimated to range from 47 to 49 dB (Leq) at 25 feet separation distance.

The total daily movements and their daytime/nighttime splits along the various routes were not available. However, based on the measured single event noise levels plus spot hourly counts of the Wiki Wiki bus and shuttle movements, it was concluded that the noise from the Wiki Wiki buses along the routes probably do not exceed 65 Ldn at 25 feet separation distance, except at those bus stations where compressed air releases occur. Along the small shuttle bus routes, noise levels probably do not exceed 55 Ldn at 25 feet separation distance. These levels are relatively low when compared to existing noise levels from aircraft noise sources within the airport complex.

The airport area is also subjected to traffic noise, especially along the Nimitz Highway corridor and from the elevated section of H-1 that passes through the HIA area. According to a traffic noise study prepared for the Office of State Planning (Helber, Hastert & Kimura Planners, et al., 1989), the Nimitz Highway corridor causes maximum hourly noise levels of 65 dBA at a distance of 250 to 300 feet from the centerline of the roadway. During evening periods, when traffic volumes decrease by about one-third, average hourly noise levels decrease to approximately 60 dBA.

6.3.2 Probable Impacts

The existing noise characteristics of the airport area have the potential to be impacted by all of the proposed projects:

The degree of impact significance on the noise characteristics of the HIA area by the various projects has been assessed on the basis of facilities either being located within areas subjected to noise levels that exceed federal or State standards or the ability of a given project to reduce the overall HIA noise levels or relocate existing noise sources to other areas, thereby decreasing noise level in a more sensitive area, e.g., the Engine Runup Pad.

In general, the majority of the proposed projects will not, in themselves, cause any changes in the present or future noise in the HIA area. However, some of the projects, such as the above cited Engine Runup Pad, will be relocating present noise sources to areas less sensitive to aircraft noise, i.e., away from inhabited structures. Other projects, e.g., the Kapalama Lands Development, could cause an increase in hourly noise levels by increasing the light industrial activity in the area. The change in tenant mix along Ualena Street could occasionally increase nighttime noise levels. However, increased activities are not expected to cause significant increases in noise levels in that new activities would have to comply federal and State noise regulations. In some cases, increased traffic noise, resulting from increased aircraft operations and passenger levels, will be relocated from one area of the airport to another, e.g. the ITB Complex and Roadway Improvement, Parking Facilities projects. Traffic noise in the main terminal area due to international arrivals and departures may decrease when the new ITB Complex is operational, but traffic noise in the vicinity of the new ITB Complex will be increased. Overall, noise levels in the vicinity of the airport are expected to decrease due to the use of quieter aircraft and more efficient aircraft operations and management procedures.

Increased traffic noise due to increased aircraft operations and passenger levels are expected to occur in all HIA terminal areas. However, these increased noise levels are expected to be less than aircraft generated noise levels and would only affect the area in the immediate vicinity of the roadways. There will be short-term increases in noise levels due to construction activities with noise levels in different areas of the airport increasing or decreasing depending on the level of construction activity. Typical construction activity noise levels (excluding pile driving) are shown in Figure IV-5. The impulsive noise levels of impact pile drivers are approximately 15 dB higher than the levels shown in Figure IV-5, while the intermittent noise levels of vibratory pile drivers are at the upper end of the noise level ranges depicted in the figure.

The maximum allowable noise and vibration characteristics of the future APM vehicles will be specified within the project's Request for Proposal (RFP). From the APM noise level requirements included in the draft RFP and the measurements of Wiki Wiki bus noise, the following conclusions are possible:

- The existing Wiki Wiki buses are at least 6 to 8 dB noisier than the proposed APM transit vehicles during cruise, acceleration or deceleration.

- During curbside idle, both the Wiki Wiki buses and the APM vehicles have similar noise levels.

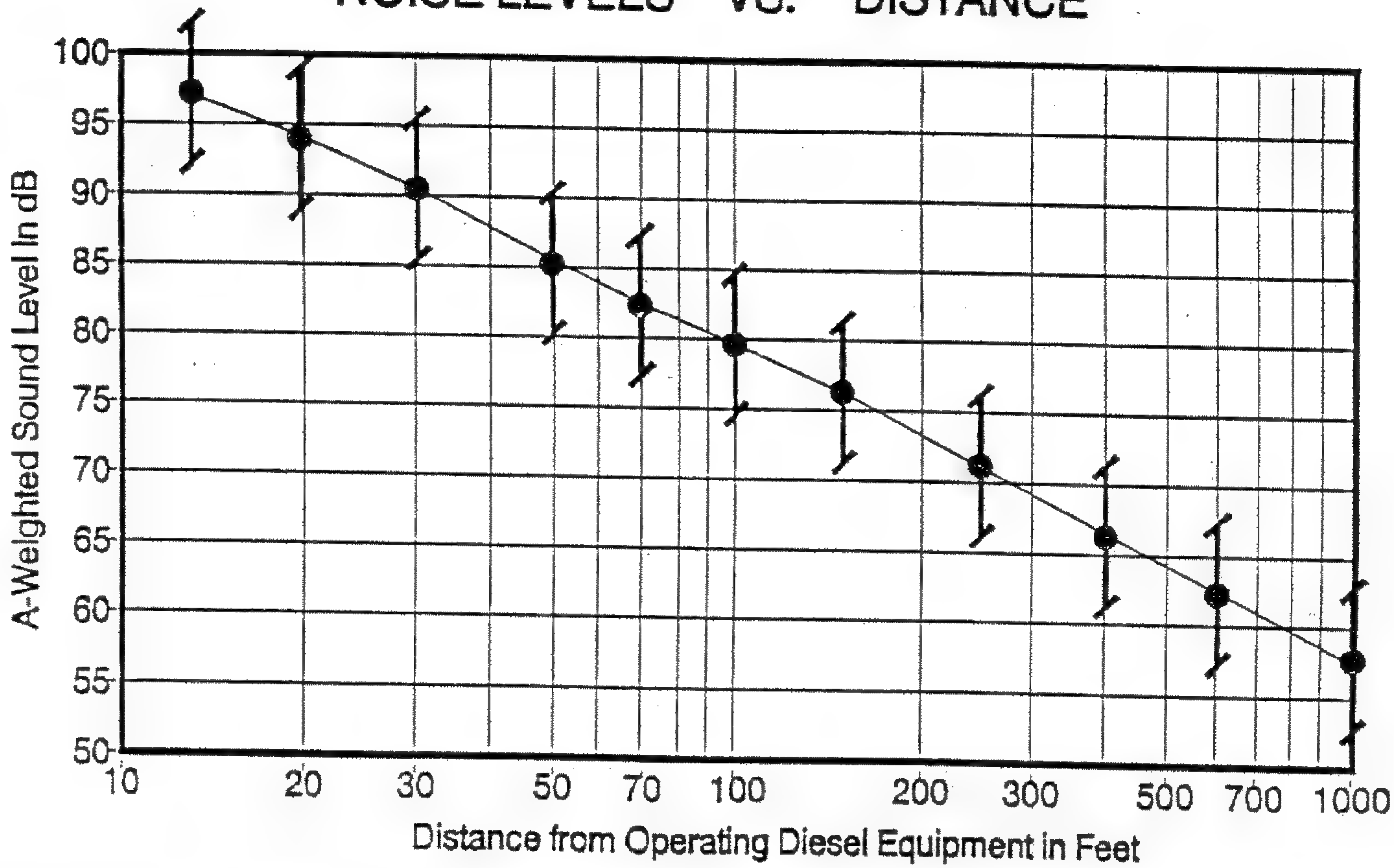
- The compressed air release noise associated with the Wiki Wiki buses will not be present from the APM vehicles. This is a significantly quieter (by 18 dB) feature of the APM vehicles during braking and passenger door operations.

- The small Wiki Wiki shuttle buses are as quiet or slightly quieter than the proposed APM transit vehicles.

- The interior noise levels of the APM vehicles are expected to be 6 to 12 dB quieter than those within the Wiki Wiki buses.

Although the APM vehicles are expected to be much quieter than the existing Wiki Wiki buses, more trips are expected to be conducted by the new transit vehicles. In order to describe the expected exterior noise levels associated with the proposed PAL-1 and PAL-

ANTICIPATED RANGE OF CONSTRUCTION NOISE LEVELS VS. DISTANCE



AIRPORTS DIVISION
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HONOLULU INTERNATIONAL AIRPORT
ENVIRONMENTAL
IMPACT STATEMENT

Edward K. Noda
and
Associates, Inc.

CONSTRUCTION NOISE LEVELS

FIGURE
IV-5

2 configurations of the APM System, Ldn vs. distance curves were developed at key sections of the proposed guideway system. The following conclusions are possible:

- Typical noise levels at 50 feet distance from the centerlines of the APM guideways are expected to range from 60 to 65 Ldn.

- Minimum and maximum Ldn levels at 50 feet distance from the guideway centerlines are predicted to be 51 Ldn and 67 Ldn, respectively.

- Generally, increases in Day-Night Sound Level of 3 to 4 decibels are predicted to occur along the guideways during the transition from PAL-1 to PAL-2.

- Predicted Ldn levels along the APM guideways are expected to be compatible with airport activities.

- Because the APM stations are expected to be air conditioned, with sliding glass doors separating the waiting areas from the guideways, noise levels within the waiting areas of the APM stations are not expected to exceed 57 dB with the station doors closed.

Noise impacts and tenant complaints associated with the proposed APM System are not expected to occur due to the planned configuration and locations of the guideways in relationship to the airport terminals. In addition, predicted Ldn levels from the APM System are not excessive for the types of commercial activities normally undertaken at the airport complex. Closure and air conditioning of the majority of the occupied spaces which front the guideways is also the normal and expected condition, and exterior noise from both aircraft and APM vehicle sources are expected to be attenuated by a minimum of 20 dB within these air conditioned spaces.

The only area of potential noise impact to the community from the proposed APM System is at the northeast end of the Diamond Head Loop. The distances from the future guideway to the final airport property boundary line and the zoning of the adjoining property could not be determined because the State is currently considering acquiring additional property that is directly mauka of Aolele Street. If State Department of Health

noise limits are not exceeded at the airport property line, adverse noise impacts from the APM System and complaint risks from neighboring property owners will also be minimized.

6.3.3 Mitigation Measures

The increases in traffic noise attributable to the proposed projects will be difficult to perceive over the 20-year development period. As noted previously, aircraft generated noise levels are predicted to decrease with the introduction of quieter (Stage 3) aircraft into the aircraft fleet, as well as improved and more efficient operations and management procedures. The airlines are required to use Stage 3 aircraft (presently the quietest aircraft group) by the year 2000.

Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50-foot distance), and to the exterior nature of the work. The use of properly muffled equipment will be required for all projects and, to the maximum extent possible, construction activity, especially in noise sensitive areas, will comply with State Department of Health guidelines. However, a variance from the Department of Health curfew periods for noisy construction activities should be considered since it may shorten the total construction period and thereby lessen the cumulative noise exposure period of tenants in the adjoining buildings within the airport complex.

Noise mitigation measures in the form of total closure with automatic, sliding glass doors; CMU or concrete wall and floor construction; suspended acoustical ceilings; carpeting; and thick, laminated, glazing are planned for use within the waiting areas of the APM transit stations. These should be more than adequate to maintain interior noise levels to less than 60 Ldn with the sliding doors closed.

Outside the stations' waiting areas, the use of absorptive ceiling panels such as perforated metal panels or aluminum slats above the station platform area would be useful in minimizing reverberant sound buildup within the immediate vicinity.

Within the airport terminal areas, the use of exterior concrete or CMU walls with 9/32 inch thick laminated glass should be sufficient to attenuate APM vehicle noise during

passbys as close as 25 feet from the transit vehicles. Because this type of construction is normally used at the airport complex for its enclosed terminal areas, additional or extraordinary noise mitigation measures for the APM System should not be required.

6.4 WATER SUPPLY

6.4.1 Existing Conditions

Existing and future demands for potable water have been studied during the conduct of a utilities evaluation for the airport, which is included as an appendix to this EIS. The following briefly summarizes the water supply information contained in that report.

Potable water for HIA is obtained through a 24-inch diameter City and County of Honolulu Board of Water Supply (BWS) main that is located along Nimitz Highway. Three 16-inch mains, connected to the 24-inch main, serve HIA and run along Lagoon Drive, Rodgers Boulevard and Paiea Street. Flows are measured by three 8-inch turbine meters (Lagoon Master Meter, Aolele Master Meter and Paiea Master Meter). The three 16-inch mains are interconnected by another 16-inch line that runs along Aolele Street. The major portion of the developed portion of HIA is now served by 16-inch and 12-inch mains that complete the water supply loop system. Future improvements to the existing water supply lines include extension of the 16-inch main along Lagoon Drive to serve the South Ramp area. The existing and future water system for HIA is shown on Figure IV-6.

Current consumption for HIA is approximately 1.8 million gallons per day (mgd). The most significant variable affecting water usage at the airport is passenger volume. Historical data indicate that the HIA terminals use about 15 gallons per passenger per day (gppd). In addition, HIA water consumption includes 0.14 mgd for passenger insensitive activities, 0.191 mgd of water loss and 0.60 mgd for use by Hickam Air Force Base. Total consumption for 1988, including terminal usage, passenger insensitive activities and the water loss was 460 million gallons (mg) and the total passenger traffic for that year was 22 million. Based on the total consumption and passenger level, the average consumption was approximately 21 gppd. In addition to the use of potable water for passenger and other purposes, approximately 100,000 gpd of non-potable water is used for airport irrigation purposes.

6.4.2 Probable Impacts

The existing water supply and demand characteristics of the airport area have the potential to be impacted by the following proposed projects:

- ITB Complex
- Expand Overseas Terminal, Diamond Head Concourse
- Relocate HIA Satellite Fuel Farm
- Construct Central Chiller Plant
- Acquire Land For Airport Use (Ualena Street)
- Construct New Air Cargo/Industrial Complex (Cargo City)
- Development of Kapalama Lands
- Landscaped Theme Park
- Construct Aircraft Wash Pad (South Ramp)

The degree of impact significance on the water supply and demand characteristics of the HIA area by the various projects has been assessed on the basis of increased demand and the ability of the BWS to satisfy that demand.

Table IV-9 indicates the forecast water demand for HIA. The demand rates assume the use of non-potable water for airport irrigation purposes. An appreciable savings in potable water consumption is anticipated with the future use of non-potable water for all irrigation at the airport as well as the use of non-potable water for irrigation purposes at Hickam Air Force Base. As noted above, approximately 100,000 gpd currently is used for airport irrigation.

The projected future potable water needs for the year 2010 are 2.74 mgd, with the new interisland terminal and anticipated developments in the South Ramp area estimated to require approximately 50,000 gpd. Based on the analyses that have been conducted, the increased demand for potable water can be supplied by BWS sources without adversely affecting service for other residential, commercial or industrial uses. Use of non-potable water for irrigation purposes is expected to begin in 1991 and will result in an appreciable reduction in the consumption of potable water at HIA.

TABLE IV-9

HIA WATER DEMAND RATES

DESIGN YEAR	ANNUAL TOTAL (mg)	AVERAGE DAY/ PEAK MONTH (mg)	PEAK HOUR AVERAGE DAY/ PEAK MONTH (mg)
1995	812.2	2.42	0.263
2000	867.2	2.52	0.281
2010	978.2	2.74	0.316

Source: Wilson Okamoto & Associates, Appendix B

6.4.3 Mitigation Measures

There are two basic measures that will be employed at HIA to reduce the use of potable water. First, as noted above, non-potable water will be used for landscape irrigation purposes. The non-potable system will utilize Kalauao Spring Water, recently developed by the BWS and the State Department of Transportation. This source of water is currently being used to irrigate landscaping on State highways. Construction is now in progress to extend the system to the airport with use expected to begin in 1991. Possibilities are also being explored to extend the system such that it can be used at Hickam Air Force Base to irrigate the golf course. Hickam currently uses approximately 800,000 gpd for irrigation, with 600,000 gallons passing through the airport system. The non-potable water capacity of

Kalauao Spring is 5.0 mgd, sufficient to meet the needs of the State Highways Division, HIA and Hickam Air Force Base.

The second measure to be undertaken with regard to the reduction of potable water supplies is a concerted effort to locate and correct present system conditions that allow the loss of 0.191 mgd. Correction of these conditions will assist in conserving valuable potable water supplies and reduce airport operations costs.

In addition to the above, all new facilities will be designed, constructed and operated in compliance with applicable State and county building standards relating to water usage, fire protection and conservation.

6.5 WASTEWATER COLLECTION, TREATMENT AND DISPOSAL

6.5.1 Existing Conditions

The wastewater system serving HIA is described in detail in Appendix B. The following briefly summarizes that information.

The wastewater system serving HIA consists of two basic systems:

(1) A 36-inch interceptor sewer along Aolele Street for the North Ramp (defined as all of HIA except the South Ramp area along Lagoon Drive), serving the interisland facilities, the Overseas Terminal and all activities fronting Aolele Street. The 36-inch interceptor will also serve the new ITB Complex, Air Cargo/Industrial Complex, APM System and Maintenance Facilities and other proposed developments on Aolele Street.

(2) The South Ramp Pumping Station (Sewer Pump Station "C") and 14-inch main running along the old Lagoon Drive alignment. This portion of the system will serve South Ramp developments. The Kalewa Street industrial area is served by a separate pumping station and 6-inch main.

Flows from North Ramp and South Ramp areas feed into the Aolele Street interceptor at Lagoon Drive, which discharges into the Kamehameha Highway Sewer Pump Station at Keehi Lagoon Park. All flows are carried to the Sand Island Sewage Treatment

Plant and treated before discharge into the Sand Island Treatment Plan ocean outfall. Figure IV-7 indicates the present and future HIA sewer system.

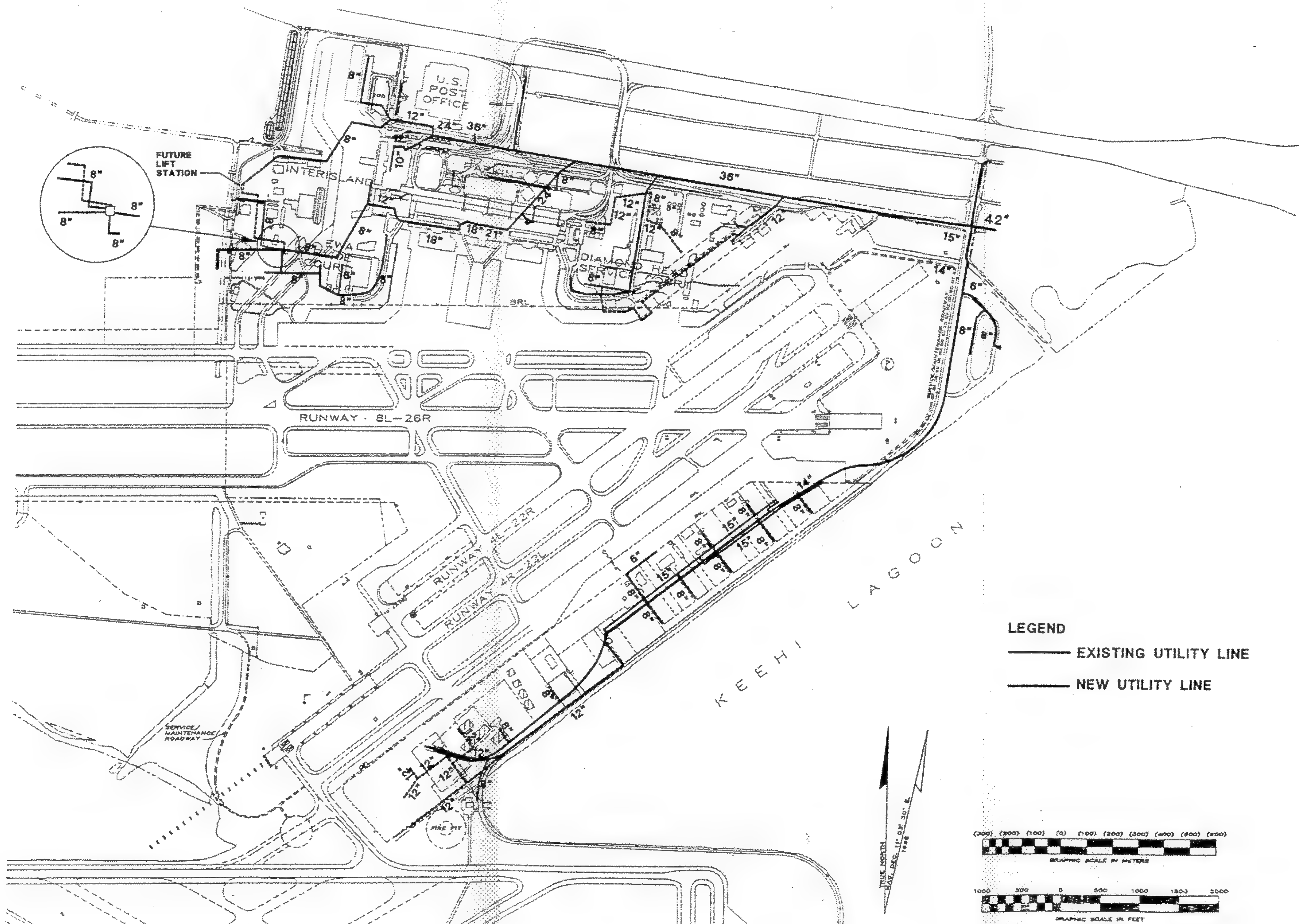
6.5.2 Probable Impacts

The existing wastewater collection, treatment and disposal system of the airport area has the potential to be impacted by the following proposed projects:

- ITB Complex
- Expand Overseas Terminal, Diamond Head Concourse
- Acquire Land For Airport Use (Ualena Street)
- Construct New Air Cargo/Industrial Complex (Cargo City)
- Development of Kapalama Lands
- Construct Aircraft Wash Pad (South Ramp)
- Interisland Terminal, Mauka Pier Extension

The degree of impact significance on the wastewater collection, treatment and disposal system of the HIA area by the various projects has been assessed on the basis of increased flow quantities and the ability of the City and County System to handle increased flows.

The projected flow from HIA, together with flows from the surrounding area (excluding Keehi Lagoon development) will fully utilize the capacity of the Aolele Street collection and transmission facilities. Downstream sewer interceptors are already at capacity. Inclusion of flow from the proposed Keehi Lagoon developments will exceed available capacity. Also, the pumping station at the Kalewa Street industrial area does not have sufficient capacity to accommodate full development of its service area. As the passenger projections for the year 2010 are approached, flow in the Aolele Street 42-inch collector would require re-evaluation because the analyses performed to date indicate that near capacity flows will be carried by the sewer line.



SOURCE: WILSON OKAMOTO & ASSOCIATES, INC.

AIRPORTS DIVISION DEPARTMENT OF TRANSPORTATION STATE OF HAWAII	HONOLULU INTERNATIONAL AIRPORT ENVIRONMENTAL IMPACT STATEMENT	Edward K. Noda and Associates, Inc.	WASTEWATER COLLECTION SYSTEM	FIGURE IV-7

For the design year of 2010, the projected design peak flow from HIA is estimated to be 9.31 mgd; 7.25 mgd from the North Ramp area and 2.06 mgd from the South Ramp area, including the Kalewa Street industrial area. Projected design peak flow from the surrounding contributing area, excluding Keehi Lagoon development, is estimated to be 10.14 mgd. Based on the preceding, the projected design peak flow for the 42-inch collector sewer feeding into Kamehameha Highway Pumping Station is 19.45 mgd.

Based on the preceding, it is evident that the proposed projects are expected to have significant impacts on the existing sewer system. However, the majority of the proposed HIA projects are being planned to accommodate expected increased aircraft operations and passenger levels, rather than to induce increased operations and passenger levels. The forecasted increases will fully utilize the capacity of the existing collection and transmission system.

The Sand Island Treatment Plant has the capacity to treat and dispose of increased flows from HIA and the surrounding area.

6.5.3 Mitigation measures

Options available for the collection and transmission of wastewater generated at HIA have been analyzed by the DOT in association with the City and County of Honolulu as part of the Keehi Lagoon Recreation Plan. One alternative is to construct a submarine force main directly from HIA to Sand Island and overland to the treatment plant. If this option is implemented, the 36-inch sewer line on Aolele Street, the 14-inch Lagoon Drive force main from the South Ramp Pumping Station "C", the 6-inch Kalewa Street industrial area force main and the 42-inch collector sewer will be adequate to serve the projected design peak flows from HIA together with flows from the surrounding area. As noted above, sewer facilities downstream of the Kamehameha Highway Pumping Station are now at or rapidly approaching capacity. As mentioned previously, the DOT is aware of this situation and continues to analyze and evaluate options for handling the sewage requirements for both HIA and Keehi Lagoon developments. Continued analysis and development of solutions to the wastewater collection and transmission system situation, along with the design, construction and operation of the new facilities in compliance with applicable federal, State and county rules and regulations, are the two primary measures being taken to minimize

potential adverse impacts that might be caused to the wastewater collection, treatment and disposal system.

6.6 SOLID WASTE COLLECTION AND DISPOSAL

6.6.1 Existing Conditions

At present, all of the solid waste generated at the airport and a majority of the solid waste generated by surrounding industrial activities is collected and disposed of by private contractors. The removal of solid waste from HIA is the responsibility of each airport tenant and user of the facility, including DOT-A. Solid wastes are generally discarded at the point of generation into small containers which are handcarried to a central bin on the tenant's site. The central bin is then emptied on a regular basis by the private collection company. Some airport tenants conduct onsite solid waste processing prior to collection. Processing methods include compaction, separation of food and other wastes, garbage grinding and disposal into the wastewater system and recycling of certain materials. Wastes from international flights are sanitized prior to collection and disposal. Based on the last solid waste study conducted for HIA (Park Engineering, 1980), about 560,400 pounds per week of solid waste was generated at HIA. This translated into about 2.4 pounds per passenger. Using the 2.4 pounds per passenger figure, present per passenger solid waste generation would be about 990,000 pounds per week.

The collected wastes are disposed of either at the City and County of Honolulu's H-Power plant in the Campbell Industrial Park or at one of the approved landfill sites on Oahu.

6.6.2 Probable Impacts

The existing solid waste collection and disposal system characteristics of the airport area have the potential to be impacted by the following proposed projects:

- ITB Complex
- Expand Overseas Terminal, Diamond Head Concourse

- APM System and Supporting Facilities
- Acquire Land For Airport Use (Ualena Street)
- Construct New Air Cargo/Industrial Complex (Cargo City)
- Development of Kapalama Lands

The degree of impact significance on the solid waste collection and disposal system characteristics of the HIA area by the various projects has been assessed on the basis of increased quantities and the ability of private and/or City and County facilities to handle increased quantities.

With an increase in aircraft operations and passenger levels between 1990 and 2010 there will be a corresponding increase in the quantity of solid waste generated. Based on the present quantity of solid waste generated at HIA, it is estimated that approximately 1,706,000 pounds per week of solid wastes will be generated in 2010. It is presumed that the wastes generated will be disposed of primarily at the City and County H-Power Plant, thereby assisting in the generation of electrical power that is fed into the Hawaiian Electric Company island-wide grid system. It is also presumed that present recycling efforts will increase and that a greater percentage of solid wastes will be recycled in the future. Such efforts could include recycling glass, paper and possibly food wastes. However, future market and economic feasibility aspects of recycling are unknown at this time. Increased generation of solid wastes, both at HIA and in the overall Oahu community, will affect the ability of the City and County to landfill the wastes because present landfill sites are rapidly being filled and new landfill sites are unavailable. These pressures may add to the economic feasibility of recycling efforts.

6.6.3 Mitigation Measures

With the reduction in solid wastes being handled by the City and County's Waipahu incinerator and eventual closing of that facility and the expected increased costs of hauling wastes to the City and County H-Power facility, it is possible that the State may construct its own waste handling facility at or in the immediate vicinity of the airport. Should this occur, wastes from the airport would be disposed of at that location. Similarly, as noted above, should hauling costs and the unavailability of new landfill sites dictate, recycling efforts may increase, thereby decreasing the overall quantity of airport generated solid

wastes. DOT-A will continue to work with the City and County as well as tenants of the airport in determining the most efficient and economical means of disposing of airport generated solid wastes. All HIA facilities would continue to collect and dispose of solid wastes in compliance with applicable federal, State and county rules and regulations.

6.7 ELECTRICAL POWER AND COMMUNICATIONS

6.7.1 Existing Conditions

The electrical power system serving HIA is described in detail in an appendix to this EIS. The following briefly summarizes that information.

Electric power is supplied to HIA by Hawaiian Electric Company (HECO) from its Makalapa and Keehi substations. In addition there are two primary emergency generators at HIA; one rated at 600 KW/4160 V 3-phase and another at 400 KW/4160 V 3-phase, that provide power for critical operating functions during any power outage.

There are four primary feeder lines into HIA from the Keehi substation and one feeder line from the Makalapa substation. The feeder lines are rated at 11.5 KV/3-phase. The average daily electrical consumption for the Overseas and Interisland terminals, for 1987 and 1988, was 204,700 kilowatt hours (KWH), resulting in a consumption of approximately 83 watthours per square foot per day. The average monthly and daily consumption of electrical power in 1988 was less than in 1987. In fiscal year 1989 the average daily electrical consumption was 212,510 KWH, and in 1990 it increased to 216,706 KWH.

Communications (telephone) service to HIA is provided by Hawaiian Telephone Company (HTCO) from its Moanalua Central Office. This office is currently equipped for 22,000 lines but has an ultimate capacity of 27,000 lines. HIA is served with approximately 3,200 incoming lines, consisting of 1,700 lines entering the main telephone equipment room at the Main Terminal Building, 900 lines directly serving United Airlines and 600 lines that service the South Ramp tenants. There are an additional 25 lines from HTCO's Downtown Central Office feeding into the main telephone equipment room at HIA. The interisland facilities are served by lines from Elliot Street.

All 600 lines in the South Ramp area are now filled and HTCO has scheduled the installation of a new 900 line cable along Lagoon Drive in 1991 to serve new tenants at South Ramp. HTCO is also considering the installation of a remote switching unit at South Ramp to service the increased capability and to allow interconnection between the South Ramp and Main Terminal.

The telephone lines at the main telephone equipment room are approximately 90 percent filled. To provide for HIA expansion, HTCO has scheduled installation of 800 new lines for a new central telephone office to be located either at Paiea Street or the new ITB Complex. The new lines would be activated concurrently with the completion of the new Diamond Head Concourse facilities and ITB Complex. In addition, HTCO is considering a new fiber optic link between the airport and the Downtown Central Office.

HTCO and the Airports Division also have a series of interconnected underground conduits through which the telephone lines pass. There are 20 HTCO conduits on Paiea Street which terminate at Aolele Street and feed into 14 Airports Division conduits. The Airports Division will have to add two new conduits to hold larger lines than those for which the present conduits were designed.

6.7.2 Probable Impacts

The existing electrical power and communication systems characteristics of the airport area have the potential to be impacted by the following proposed projects:

- ITB Complex
- Expand Overseas Terminal, Diamond Head Concourse
- Relocate HIA Satellite Fuel Farm
- APM System and Supporting Facilities
- Construct Central Chiller Plant
- Install Microwave Landing System
- Acquire Land For Airport Use (Ualena Street)

- Construct New Air Cargo/Industrial Complex (Cargo City)
- Development of Kapalama Lands
- Construct New Electrical Power Substations and Distribution Systems
- Roadway Improvements, Additional Parking Facilities
- Interisland Terminal, Mauka Pier Extension

The degree of impact significance on the electrical power and communication systems of the HIA area by the various projects has been assessed on the basis of increased service demands and the ability of HECO and HTCO facilities to handle increased service demands.

Electrical power consumption requirements for 1995 through 2010 are shown in Table IV-10. As shown, the electrical power consumption requirements for the Overseas Terminal, Interisland facilities, ITB Complex and South Ramp facilities will increase from about 501.9 KWH in 1995 to about 591.9 KWH in 2010. The electrical power demand for HIA will increase from approximately 30 megawatts (MW) in 1995 to about 50 MW in 2010. The APM System, which was not included in the consumption data, is expected to require about 6 MW. The power quantities that will be required by the new Air Cargo/Industrial Complex, ITB Complex and other facilities that may be located on the Ualena Street lands to be acquired are not known, due to the lack of information regarding the specific types of facilities that will be located on the lands and the square footage of those facilities.

To meet the increased power demand for HIA expansion, a new HECO substation is planned to be constructed at Rodgers Boulevard in late 1992 to service the expansion of the Overseas Terminal, the Interisland Terminal Building and the ITB Complex. New ducts from the Rodgers Boulevard substation will be constructed to the Interisland Terminal, Overseas Terminal and ITB Complex and existing duct capacity in the vicinity of the interisland terminal will be expanded. Another new HECO substation will be constructed on Lagoon Drive in the vicinity of Kalewa Street to service the South Ramp.

In addition to the above, the capacity of the two emergency generators will need to be increased to handle increased facilities as will the HIA internal electrical power distribution system. Similarly, the ITB Complex will have its own emergency generators designed to accommodate the additional load the facility will place on the overall HIA

TABLE IV-10

HIA ELECTRICAL POWER REQUIREMENTS

DESIGN YEAR	LOCATION/SQUARE FOOTAGE	PROJECTED ELECTRICAL CONSUMPTION (KWH/DAY)
1995	Overseas Terminal/2,748,000	247,300
	Interisland	
	Passenger Terminal/373,000	33,600
	Maintenance Facility/328,000 (Approx.)	16,400
	International Terminal/1,740,000	156,600
	South Ramp/1,371,000	48,000
	Automated People Mover System	Power Req'mt. 6 MW
2005	Overseas Terminal/3,275,000	294,800
	Interisland	
	Passenger Terminal/373,000	33,600
	Maintenance Facility/328,000 (Approx.)	16,400
	International Terminal/1,740,000	156,600
	South Ramp/1,371,000	48,000
	Automated People Mover System	Power Req'mt. 6 MW
2010	Overseas Terminal/3,275,000	294,800
	Interisland	
	Passenger Terminal/386,000	34,700
	Maintenance Facility/328,000 (Approx.)	16,400
	International Terminal/2,200,000	198,000
	South Ramp/1,371,000	48,000
	Automated People Mover System	Power Req'mt. 6 MW

Source: Wilson Okamoto & Assoc., 1990.

electrical load. The ITB generators will be connected to the HIA emergency power system to provide redundancy.

The present and forecast expanded HECO power generation facilities are expected to have sufficient capacity to accommodate the increased power demand that will be generated by the proposed projects. Similarly, as noted previously, existing HTCO facilities will require expansion to meet increased telephone and communications requirements. New lines will be added as will new switching stations and conduits. It is expected that the planned new HECO and HTCO facilities and equipment will adequately serve the airport.

6.7.3 Mitigation Measures

The State Department of Transportation, Airports Division has been and will continue to coordinate HIA expansion activities and plans with both HECO and HTCO. This coordination effort will assist in assuring that the utilities can provide the power and telecommunications requirements for HIA in a timely manner. In addition, to assist in reducing the demand for electrical power at the new HIA facilities and in keeping with the State's energy conservation policies, during the design of the new facilities, the use of fluorescent lights with high efficiency ballasts, the use of heat pump water heaters, the use of low water consumption water closets and the use of time switches or an energy management control system to cut off electricity when not needed will be considered and specified where possible. In addition, the Central Chiller System project has been planned specifically to reduce air conditioning costs and to allow the airport system to operate more efficiently and effectively. Also, the airport is installing an energy monitoring and control system, an operational control system and a ramp aircraft air conditioning system. The latter system will provide a more economical substitute for using an aircraft's auxiliary power unit during ground servicing operations. In addition to significantly reducing consumption of aviation fuel, emissions of air pollutants and noise will also be reduced.

6.8 POLICE AND FIRE PROTECTION SYSTEMS

6.8.1 Existing Conditions

Police and fire protection services, provided by the City and County of Honolulu,

State and privately contracted companies, will only be minimally impacted by the proposed projects.

6.8.2 Potential Impacts

The police and fire protection systems will be impacted by the following projects:

- ITB Complex
- Expand Overseas Terminal, Diamond Head Concourse
- Relocate Satellite Fuel Farm
- Acquire Land for Airport Use
- Construct New Air Cargo/Industrial Complex
- Roadway Improvements and Parking Facilities
- Interisland Terminal, Mauka Pier Extension

While there will be an increase in passengers and aircraft operations, the added burden on publicly provided police and fire protection services will be difficult to determine given the overall population increase that is expected to occur over the next 20 years. Airport fire protection services will be expanded incrementally as required. The relocation of some facilities and airport operations to new areas, e.g., international arrivals and departures, new interisland terminal, and related roadway improvement projects, are expected to ease some present traffic control and police problems. In general, none of the proposed projects is expected to significantly and/or adversely affect the police and fire protection services afforded HIA. Fire protection at the Satellite Fueling Facility will be a primary concern.

6.8.3 Mitigation Measures

The Satellite Fueling Facility will be designed and constructed in accordance with the National Fire Code including NFPA 30 - "Flammable and Combustible Liquids Code", NPA

11 (A, C) - "Foam and Combined Agent Systems", NFPA 20 - "Installation of Centrifugal Fire Pumps", NFPA 77 - "Static Electricity", NFPA 78 - "Lightning Protection Code", NFPA 321 - "Classification of Flammable and Combustible Liquids", NFPA 325M - "Fire Hazard Properties of Flammable Liquids", NFPA 497 (A, M) - Classification of Class 1 Hazardous Locations for Electrical Equipment", and other applicable NFPA regulations.

The potential risks of an explosion of the Satellite Fueling Facility are also of concern, but cannot be quantified at this early stage. In design of the facility, the extent of the impact/blast zone from a catastrophic event will be quantified, and evacuation plans drawn up for potentially affected areas. Plans will also be formulated to respond to a fuel spill as mandated by government laws, rules, regulations and codes.

6.9 HEALTH CARE FACILITIES

As with police and fire protection services, the health care facilities and services in the vicinity of HIA are not expected to be significantly affected by any of the proposed projects. During construction and operation of the various facilities there will be a need for the availability of emergency health care facilities in reasonably close proximity to the airport. These facilities currently exist at Tripler Army Hospital and at the Kaiser - Permanente Moanalua Medical Center, located about three miles north of HIA as well as at Queens Medical Center, Kuakini and St. Francis Hospitals located about 4 miles northeast of HIA.

6.10 SCHOOLS AND RECREATION FACILITIES

6.10.1 Existing Conditions

The existing schools and recreation facilities serving the airport area will generally be unaffected by the proposed projects.

The Landscape Theme Park will positively impact the airport by creating an open area for airport users.

6.10.2 Potential Impacts

The following projects may have impacts on recreational facilities:

- Relocate Satellite Fuel Farm
- Landscape Theme Park

Relocation of the fuel farm to the Lagoon Drive Airport Service Area will put it adjacent to Keehi Lagoon Park and recreational waterways. Potential hazards to recreational boating and waterways will be similar to those of the existing fuel farm on Sand Island Access Road next to the Keehi Small Boat Harbor. For transient activities (boating traffic and canoes) this is expected to be minor.

There will be no significant impacts to school facilities.

6.10.3 Mitigation Measures

As mentioned earlier, evacuation plans for fire/blast impacts and fuel spill cleanup plans will be completed within the design of the Satellite Fuel Facility.

7. CUMULATIVE IMPACTS

There are three types of cumulative impacts relevant to this analysis: those attributable to interactions among the projects described in this EIS, those potentially resulting from development of other lands near the airport, and those more regional in nature resulting from or contributing to the general economic and population growth of the island and the state.

The cumulative impacts of the various projects described in this document have been considered in the sections above pertaining to each resource. All projects which could impact each resource considered are identified in Table IV-1 and listed in the respective section. Cumulatively, the described projects will increase the safety, efficiency and economy with which HIA can meet the existing and projected increases in aircraft

operations, numbers of passengers and cargo volumes. The planned changes in the physical layout of the airport facilities will enhance operational efficiency and provide additional flexibility in future facility use. The greater size of the airport's physical plant and the increased level of operations will generate increased ground traffic, noise and emissions of air pollutants. Electrical demand will increase, as will demands for other public services, especially for disposal of liquid and solid wastes. Mitigation measures for adverse impacts are contained in previous sections on the individual resources.

To a large degree, opportunities for future development in the vicinity of the airport are severely limited by the surrounding water and military installations, and restrictions on land use and building heights. The closest major development would be the improvements to Keehi Lagoon proposed in the Keehi Lagoon Recreation Plan (Noda and Assoc., 1990). While the intensity of use of the Lagoon would increase substantially under this proposal, the types of uses proposed are essentially the same as those currently in the airport vicinity. For many decades the airport operations, industrial facilities and recreational uses have coexisted compatibly on adjacent lands, and there is no reason to suspect that this would be changed by the airport improvements or the Keehi Lagoon development. Cumulative demands on utilities and public facilities and services in the area are being considered in sizing the improvements being planned as part of the airport expansion.

A second major proposed development in the airport area is the City and County of Honolulu's Light Rail Rapid Transit System. The main line is planned to run along Nimitz Highway in the airport area. An airport station is planned for the ewa side of Aolele Street on the makai side of Nimitz highway in the parking lot of the Interisland Terminal. Another station is planned near the intersection of Lagoon Drive and Nimitz Highway. Construction of this system would help to mitigate those adverse impacts of airport expansion that result from increased ground transportation activities, particularly increased automobile traffic and mobile source emissions of air pollutants. The final phase of development of the APM System will be to extend service from the Interisland Terminal to the rapid transit station.

Other developments in the airport area include various hotel and office complexes planned for the vicinity of Nimitz Highway and Paiea Street. If available, information from these projects were incorporated into this EIS to assess specific impacts. The impacts from those developments with insufficient data will have to be addressed in their respective environmental documents.

The improvements to HIA are being necessitated by the growth of Oahu and the State of Hawaii - growth of the resident population, growth in the visitor industry, and overall economic growth. Population growth and economic expansion are generally perceived as positive developments for a community. Cumulatively, the improvements to HIA are expected to facilitate the economic growth of Oahu and the State of Hawaii, and consequently, in a regional context, the proposed projects are expected to yield significant net benefits.

CHAPTER V

RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES AND CONTROLS FOR THE AFFECTED AREA

1. INTRODUCTION

The applicable governmental land use plans, policies and controls affecting the proposed project include the Hawaii State Plan and State Functional Plans for Employment, Energy, Health, Human Services, Tourism and Transportation; Hawaii Coastal Zone Management Program; City and County of Honolulu Special Management Area (SMA), City and County of Honolulu General, Development and Public Facilities Plans; and City and County of Honolulu Zoning. The projects' relationships to these plans, policies and controls are described in the sections that follow. Following receipt of all necessary permits and approvals (see Chapter I, Section 11.0), the proposed projects would be consistent with the above noted plans and land use controls.

The State Land Use Commission, under Chapter 205, Hawaii Revised Statutes, classifies all lands into one of four districts, urban, rural, agricultural or conservation. The actions described herein are proposed to take place within the existing urban district. No reclassification of lands would be involved, and therefore, the proposed projects are consistent with the existing land use designations.

1.1 HAWAII STATE PLAN (REVISED 1989)

The Hawaii State Plan (Chapter 226, Hawaii Revised Statutes, as amended and approved June 8, 1989), establishes a set of goals, objectives and policies that are to serve as long-range guidelines for the growth and development of the State. The Plan is divided into three parts. Part I (Overall Theme, Goals, Objectives and Policies); Part II (Planning, Coordination and Implementation); and Part III (Priority Guidelines). Part II elements of the State Plan pertain primarily to the administrative structure and implementation process of the Plan. As such, comments regarding the applicability of this part to the proposed project are not appropriate. The following sections of the Hawaii State Plan are directly applicable to the proposed project:

1.1.1 Part I. Overall Theme, Goals, Objectives and Policies

The Hawaii State Plan lists three "Overall Themes" relating to: (1) Individual and family self-sufficiency; (2) Social and economic mobility; and (3) Community or social well-being [Section 226-3 (1-3)]. These themes are viewed as "basic functions of society" and goals toward which government must strive. To guarantee the elements of choice and mobility embodied in the three themes, three goals were formulated [Section 226-4 (1-3)]:

(1) A strong, viable economy, characterized by stability, diversity and growth that enables fulfillment of the needs and expectations of Hawaii's present and future generations.

(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems and uniqueness, that enhances the mental and physical well-being of the people.

(3) Physical, social and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring and of participation in community life.

Response: The proposed projects would contribute to the attainment of the three goals. The projects would provide direct and indirect short- and long-term employment opportunities for the present and future residents of Honolulu/Oahu; the proposed projects would generate increased State and county tax revenues; and the projects would contribute to the stability, diversity and growth of local and regional economies. Key elements of the proposed projects relative to the above noted goals are that the proposed projects would provide additional employment, opportunities for existing and future residents of Honolulu/Oahu; that they would provide these opportunities in a planned setting wherein design, operation and maintenance, and environmental protection provisions can be effectively, efficiently and economically controlled; and that they would provide these opportunities within the existing airport boundaries as well as close to existing and planned residential developments such that travel times are minimized and yet separated from planned or existing residential developments such that project activities are not a nuisance.

Specific objectives, policies and priority directions of the State Plan most relevant to the proposed project are discussed below. Note, objectives and policies not listed are those that are not applicable to the proposed project.

Section 226-5 Objectives and Policies for Population

Objective:

(a) To guide population growth to be consistent with the achievement of the physical, economic and social objectives of the State.

Policies:

(b)(3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the State.

(b)(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.

Response: The proposed projects are expected to provide long-term economic and employment opportunities for businesses servicing and providing equipment and supplies for aviation-related activities. The development of the projects is consistent with the airport planning that has been performed over the past 30 years and is in response to forecast increased aircraft operations and passenger levels and/or is being proposed to enable the airport to operate more efficiently and economically.

226-6 Objectives and Policies for the Economy - General

Objective:

(a)(1) To increase and diversify employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.

(a)(2) A steadily growing and diversified economic base that is not overly dependent on a few industries.

Policies:

(b)(1) Expand Hawaii's national and international marketing, communications and organizational ties to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.

(b)(2) Promote Hawaii as an attractive market for environmentally and socially sound investment activities that benefit Hawaii's people.

(b)(4) Expand existing markets and penetrate new markets for Hawaii's products and services.

(b)(6) Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.

(b)(9) Foster greater cooperation and coordination between the public and private sectors in developing Hawaii's employment and economic growth opportunities.

(b)(10) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.

(b)(11) Maintain acceptable working conditions and standards for Hawaii's workers.

(b)(13) Encourage businesses that have favorable financial multiplier effects within Hawaii's economy.

(b)(14) Promote and protect intangible resources in Hawaii such as scenic beauty and the aloha spirit, which are vital to a healthy economy.

(b)(16) Foster a business climate in Hawaii - including attitudes, tax and regulatory policies and financial assistance programs - that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.

Response: As noted previously, the proposed projects are planned in response to present needs as well as forecast increased aircraft operations and passenger levels. The projects will implement elements of the airport that have been master planned and are environmentally and socially sound investment amenities that will assist in the marketing and promotion of Hawaii. Further, the projects will allow businesses to expand existing markets and penetrate new markets for Hawaii's products and services. The proposed projects would provide continued construction activity that would closely follow construction of other airport projects, thereby ensuring local construction workers continued employment as well as provide employment opportunities for other types of construction trades. Given the present land use designations for the project site, the proposed projects are consistent with State growth objectives. The proposed projects would contribute toward increased

employment, income and job choice opportunities for Honolulu/Oahu residents, thereby leading to improved living standards for those residents. The development of the proposed projects would also increase the opportunities to control the working conditions of the businesses that would be located within and/or service the projects, increase the business opportunities for businesses having favorable financial multiplier effects and provide a climate conducive to the expansion of existing businesses and the creation of new business.

226-8 Objective and policies for the economy - visitor industry

Objective:

(a) Planning for the State's economy with regard to the visitor industry shall be directed towards achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaii's economy.

Policies:

(b)(1) Support and assist in the promotion of Hawaii's visitor attractions and facilities.

(b)(2) Ensure that visitor industry activities are in keeping with the social, economic and physical needs and aspirations of Hawaii's people.

(b)(4) Encourage cooperation between the public and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.

(b)(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.

(b)(6) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the visitor industry.

(b)(7) Foster a recognition of the contribution of the visitor industry to Hawaii's economy and the need to perpetuate the aloha spirit.

Response: The proposed projects are in keeping with and would assist in attaining the above stated objectives and policies by providing facilities to service Hawaii's visitor

industry; provide facilities that are in keeping with the social, economic and physical needs and aspirations of Hawaii's people; provide facilities that are well designed to adequately serve the visitor industry as well as residents of Hawaii while being sensitive to neighboring activities and communities; provide new job opportunities and steady employment; and further the policy of providing opportunities for Hawaii's people to obtain job training and allow for upward mobility within the visitor industry. The proposed developments would offer short-term and long-term employment to residents of the State and Honolulu/Oahu and would contribute to sustaining the level of construction activity in the State. As noted in Chapter II, the proposed projects are being carefully planned and developed, with extensive public input, to meet existing and future market demands and the projects would provide a diverse range of employment opportunities within the region. Similarly, the projects are being planned to aid in fostering a recognition of the positive contribution made by the visitor industry to the State's economy and the need to perpetuate the aloha spirit.

226-10 Objectives and policies for the economy - potential growth activities

Objective:

(a) Planning for the State's economy with regard to potential growth activities shall be directed towards achievement of the objectives of development and expansion of potential growth activities that serve to increase and diversify Hawaii's economic base.

Policies:

(b)(1) Facilitate investment and employment in economic activities that have the potential for growth such as diversified agriculture, aquaculture, apparel and textile manufacturing, film and television production and energy and marine-related industries.

(b)(2) Expand Hawaii's capacity to attract and service international programs and activities that generate employment for Hawaii's people.

(b)(3) Enhance and promote Hawaii's role as a center for international relations, trade, finance, services, technology, education, culture and the arts.

(b)(5) Promote Hawaii's geographic, environmental, social and technological advantages to attract new economic activities into the State.

(b)(6) Provide public incentives and encourage private initiative to attract new industries that best support Hawaii's social, economic, physical and environmental objectives.

Response: The proposed projects would assist in the achievement of the above State objectives and policies by providing facilities that directly respond to present needs and forecast increased aircraft operations and passenger levels. These increases are expected to result in the promotion of the growth of diversified agriculture and aquaculture; encourage existing business to expand and provide the impetus for the creation of new businesses centered around aviation-related activities; assist in enhancing and promoting Hawaii's role as a center for international and domestic relations, trade, finance, services and technology; promote the State's geographic, environmental, social and technological advantages; and development of the proposed projects would represent the extent of public incentives required to encourage the private interests to utilize the planned facilities, thereby supporting the State's social, economic, physical and environmental objectives.

226-14 Objectives and policies for facility systems - in general

Objectives:

(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal and energy and telecommunication systems that support statewide social, economic and physical objectives.

Policies:

(a)(1) Accommodate the needs of Hawaii's people through the coordination of facility systems and capital improvement priorities in consonance with State and county plans.

(a)(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.

(a)(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.

(a)(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction and maintenance of facility systems.

Response: The proposed projects have been proposed in response to present and forecast needs and are in consonance with existing and planned State and county plans; assist in providing the air transportation facilities required to serve Hawaii's people and visitors; will be supported through airport user fees; and will be financed through airport user fees and airport bond issues. The proposed projects will aid in allowing the airport to operate in an economical and efficient manner, thereby reducing maintenance costs.

226-17 Objectives and policies for facility systems - transportation

Objectives:

(a) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:

(a)(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe and convenient movement of people and goods.

(a)(2) A statewide transportation system consistent with planned growth objectives throughout the State.

Policies:

(b)(1) Design, program and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter.

(b)(2) Coordinate State, county, federal and private transportation activities and programs toward the achievement of statewide objectives.

(b)(6) Encourage transportation systems that serve to accommodate present and future development needs of communities.

(b)(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs.

(b)(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification.

(b)(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment.

Response: The proposed projects are consonant with on-going and planned State and county projects to assist in promoting statewide economic growth and diversification and are being designed to be sensitive to the needs of the affected community and quality of the area's environment. As noted previously in this chapter, the proposed project would provide short- and long term employment and economic opportunities. Also, as noted previously, the proposed projects are being planned and designed to complement existing and under construction airport and harbor facilities in the immediate area. The proposed projects will be connected to and integrated with an intra-airport transportation system as well as the City and County of Honolulu rapid transit system; and provide the impetus for public and private development of increased cargo handling facilities.

1.1.2 Part II. Planning, Coordinating and Implementation

As indicated previously, this part of the Hawaii State Plan pertains to the administrative structure and implementation process of the Plan. As such, comments are not deemed appropriate.

1.1.3 Part III. Priority Guidelines

The purpose of this part of the Plan is to establish overall priority guidelines to address areas of statewide concern. The Plan notes (Section 226-102) that the State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice and quality education. The priority guidelines applicable to the proposed project are discussed below:

226-18 Objectives and Policies for Facility Systems - Energy/Telecommunications

Objectives:

(a) Planning for the State's facility systems with regard to energy/telecommunication shall be directed towards the achievement of the following objectives:

(a)(1) Dependable, efficient, and economical statewide energy and telecommunication systems capable of supporting the needs of the people.

(a)(2) Increased energy self-sufficiency.

Policies:

(b) To achieve the energy/telecommunication objectives, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable power and telecommunication services to accommodate demand.

(c) To further achieve the energy objectives, it shall be the policy of this State to:

(c)(1) Support research and development as well as promote the use of renewable energy sources.

(c)(2) Ensure a sufficient supply of energy to enable power systems to support the demands of growth.

(c)(3) Promote prudent use of power and fuel supplies through conservation measures including education and energy-efficient practices and technologies.

(c)(4) Ensure that the development or expansion of power systems and sources adequately consider environmental, public health, and safety concerns, and resource limitations.

(d) To further achieve the telecommunication objective, it shall be the policy of this State to:

(d)(1) Facilitate research and development of telecommunication systems and resources.

(d)(2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunication planning.

(d)(3) Promote efficient management and use of existing telecommunication systems and services.

(d)(4) Facilitate the development of education and training of telecommunication personnel.

Response: A significant feature of the ongoing planning process is to ensure adequate, economical and dependable power and telecommunication systems throughout the airport area. Energy conservation measures are being incorporated into new facilities design through selection of appropriate technologies, equipment and operating practices.

226-103 Economic Priority Guidelines

(a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawaii's people and achieve a stable and diversified economy:

(a)(1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.

(a)(8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:

(a)(8)(A) An industry that can take advantage of Hawaii's unique location and available physical and human resources.

(a)(8)(B) A clean industry that would have minimal adverse impacts on Hawaii's environment.

(a)(8)(D) An industry that would provide reasonable income and steady employment.

(a)(10) Enhance the quality of Hawaii's labor force and develop and maintain career opportunities for Hawaii's people through the following actions:

(b) Priority guidelines to promote the economic health and quality of the visitor industry:

(f) Priority guidelines for energy use and development:

(f)(3) Provide incentives to encourage the use of energy conserving technology in residential, industrial and other buildings.

Response: The proposed projects would assist in meeting the above stated guidelines by allowing private investment in facilities that would assist in expanding existing businesses as well as provide the impetus for new businesses to be created to serve an expanded market; assist in the development of industries that can take advantage of Hawaii's location and available physical and human resources; encourage expansion of a clean industries that would have minimal adverse impacts on Hawaii's environment; assist industries that provide a reasonable income and steady employment; and provide the market for and stimulus needed to increase vocational training in an area where growth is desired and feasible. With regard to promoting the economic health and quality of the visitor industry, the proposed projects would provide the necessary facilities to minimize inconveniences and foster pleasant airport experiences. Additionally, the projects will allow the expenditure of private capital to upgrade and improve the quality of facilities in an area where they are now lacking. The proposed projects would also aid in the attainment of the energy related guidelines through the energy conservation measures that would be taken during the design, construction and operation of facilities.

1.2 STATE FUNCTIONAL PLANS

The Hawaii State Plan directs the appropriate State agencies to prepare functional plans for their respective program areas. There are twelve State Functional Plans that serve as the primary implementing vehicle for the goals, objectives and policies of the Hawaii State Plan. It is noted that many of the State Functional Plans are currently under review and are being revised to reflect present and forecast future conditions. However, the following sections of the listed State Functional Plans that are in effect are directly applicable to the proposed project:

1.2.1 State Employment Functional Plan (1989)

The State Employment Functional Plan, the preparation of which was coordinated by the Department of Labor and Industrial Relations, lists four major issue areas under which specific objectives have been defined. These issue areas and objectives are as follows:

ISSUE AREA I. EDUCATION AND PREPARATION SERVICES FOR EMPLOYMENT

Objectives:

I.A Improve the qualifications of entry level workers and their transition to employment.

I.B Develop and deliver education, training and related services to ensure and maintain a quality and competitive workforce.

ISSUE AREA II. JOB PLACEMENT

Objective:

II.A Improve labor exchange.

ISSUE AREA III. QUALITY OF WORK LIFE

Objective:

III.A Improve the quality of life for workers and families.

ISSUE AREA IV. EMPLOYMENT PLANNING INFORMATION AND EMPLOYMENT COORDINATION

Objective:

IV.A Improve planning of economic development, employment and training activities.

Under each of the above listed objectives are defined policies to implement the objectives. The implementation actions are primarily the responsibility of the Department of Industrial Labor Relations (DILR) with assistance from other agencies and groups.

Response: The proposed projects are generally in concert with the objectives of the State Employment Functional Plan in that new jobs will be created and/or others, such as in construction, continued for a period of time. By providing additional employment opportunities in several areas the proposed projects would be one more element of the

Response: While specific building designs have not been completed, the proposed projects will adhere to energy conservation standards whenever possible. Elements of energy conservation that may be incorporated into the project include the use of heat recovery pumps and the use of energy conservation lighting systems. Construction of the Central Chiller System is directly responsive to energy conservation goals. Construction of the APM System, Engine Runup Pad, the South Ramp Aircraft Wash Pad and installation of the preconditioned air systems at the Overseas Terminal Hardstands will contribute to conservation of petroleum-based energy supplies. Design of the New Electrical Power Substations and Distribution Systems will be done in such a manner as to further the Plan's goals in the areas of reliability, efficiency and conservation of resources.

1.2.3 State Health Functional Plan (1989)

The State Health Functional Plan identifies four major priority issue areas on which the plan focuses. These are (1) preventive health, (2) access to health care, (3) environmental protection, and (4) internal administrative issues. Of these four, access to health care and the environmental protection issue are the most relevant to the proposed project.

The objectives and policies of the DOH will be implemented through programs that will include development and implementation of a comprehensive air toxic control program; development and implementation of a comprehensive solid and hazardous waste management program; development and implementation of a comprehensive recreational water quality monitoring strategy; development and implementation of a non-point source pollution program to protect recreational and other surface waters; development and implementation of an indoor air pollution control program; and development and implementation of a groundwater protection program including groundwater monitoring, safe drinking water and underground injection control. These actions, in concert with existing duties and responsibilities of the DOH, form the primary environmental protection elements of the department.

Response: The proposed projects will be in compliance with applicable DOH environmental protection rules and regulations as well as those established by federal and City and County agencies. In addition, applicable DOH permit/approval requirements will

CHAPTER V

RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES AND CONTROLS FOR THE AFFECTED AREA

1. INTRODUCTION

The applicable governmental land use plans, policies and controls affecting the proposed project include the Hawaii State Plan and State Functional Plans for Employment, Energy, Health, Human Services, Tourism and Transportation; Hawaii Coastal Zone Management Program; City and County of Honolulu Special Management Area (SMA), City and County of Honolulu General, Development and Public Facilities Plans; and City and County of Honolulu Zoning. The projects' relationships to these plans, policies and controls are described in the sections that follow. Following receipt of all necessary permits and approvals (see Chapter I, Section 11.0), the proposed projects would be consistent with the above noted plans and land use controls.

The State Land Use Commission, under Chapter 205, Hawaii Revised Statutes, classifies all lands into one of four districts, urban, rural, agricultural or conservation. The actions described herein are proposed to take place within the existing urban district. No reclassification of lands would be involved, and therefore, the proposed projects are consistent with the existing land use designations.

1.1 HAWAII STATE PLAN (REVISED 1989)

The Hawaii State Plan (Chapter 226, Hawaii Revised Statutes, as amended and approved June 8, 1989), establishes a set of goals, objectives and policies that are to serve as long-range guidelines for the growth and development of the State. The Plan is divided into three parts. Part I (Overall Theme, Goals, Objectives and Policies); Part II (Planning, Coordination and Implementation); and Part III (Priority Guidelines). Part II elements of the State Plan pertain primarily to the administrative structure and implementation process of the Plan. As such, comments regarding the applicability of this part to the proposed project are not appropriate. The following sections of the Hawaii State Plan are directly applicable to the proposed project:

1.1.1 Part I. Overall Theme, Goals, Objectives and Policies

The Hawaii State Plan lists three "Overall Themes" relating to: (1) Individual and family self-sufficiency; (2) Social and economic mobility; and (3) Community or social well-being [Section 226-3 (1-3)]. These themes are viewed as "basic functions of society" and goals toward which government must strive. To guarantee the elements of choice and mobility embodied in the three themes, three goals were formulated [Section 226-4 (1-3)]:

(1) A strong, viable economy, characterized by stability, diversity and growth that enables fulfillment of the needs and expectations of Hawaii's present and future generations.

(2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems and uniqueness, that enhances the mental and physical well-being of the people.

(3) Physical, social and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring and of participation in community life.

Response: The proposed projects would contribute to the attainment of the three goals. The projects would provide direct and indirect short- and long-term employment opportunities for the present and future residents of Honolulu/Oahu; the proposed projects would generate increased State and county tax revenues; and the projects would contribute to the stability, diversity and growth of local and regional economies. Key elements of the proposed projects relative to the above noted goals are that the proposed projects would provide additional employment, opportunities for existing and future residents of Honolulu/Oahu; that they would provide these opportunities in a planned setting wherein design, operation and maintenance, and environmental protection provisions can be effectively, efficiently and economically controlled; and that they would provide these opportunities within the existing airport boundaries as well as close to existing and planned residential developments such that travel times are minimized and yet separated from planned or existing residential developments such that project activities are not a nuisance.

Specific objectives, policies and priority directions of the State Plan most relevant to the proposed project are discussed below. Note, objectives and policies not listed are those that are not applicable to the proposed project.

Section 226-5 Objectives and Policies for Population

<u>Objective</u>:

(a) To guide population growth to be consistent with the achievement of the physical, economic and social objectives of the State.

<u>Policies</u>:

(b)(3) Promote increased opportunities for Hawaii's people to pursue their socio-economic aspirations throughout the State.

(b)(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.

<u>Response</u>: The proposed projects are expected to provide long-term economic and employment opportunities for businesses servicing and providing equipment and supplies for aviation-related activities. The development of the projects is consistent with the airport planning that has been performed over the past 30 years and is in response to forecast increased aircraft operations and passenger levels and/or is being proposed to enable the airport to operate more efficiently and economically.

226-6 Objectives and Policies for the Economy - General

<u>Objective</u>:

(a)(1) To increase and diversify employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.

(a)(2) A steadily growing and diversified economic base that is not overly dependent on a few industries.

<u>Policies</u>:

(b)(1) Expand Hawaii's national and international marketing, communications and organizational ties to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.

(b)(2) Promote Hawaii as an attractive market for environmentally and socially sound investment activities that benefit Hawaii's people.

(b)(4) Expand existing markets and penetrate new markets for Hawaii's products and services.

(b)(6) Strive to achieve a level of construction activity responsive to, and consistent with, State growth objectives.

(b)(9) Foster greater cooperation and coordination between the public and private sectors in developing Hawaii's employment and economic growth opportunities.

(b)(10) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.

(b)(11) Maintain acceptable working conditions and standards for Hawaii's workers.

(b)(13) Encourage businesses that have favorable financial multiplier effects within Hawaii's economy.

(b)(14) Promote and protect intangible resources in Hawaii such as scenic beauty and the aloha spirit, which are vital to a healthy economy.

(b)(16) Foster a business climate in Hawaii - including attitudes, tax and regulatory policies and financial assistance programs - that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.

Response: As noted previously, the proposed projects are planned in response to present needs as well as forecast increased aircraft operations and passenger levels. The projects will implement elements of the airport that have been master planned and are environmentally and socially sound investment amenities that will assist in the marketing and promotion of Hawaii. Further, the projects will allow businesses to expand existing markets and penetrate new markets for Hawaii's products and services. The proposed projects would provide continued construction activity that would closely follow construction of other airport projects, thereby ensuring local construction workers continued employment as well as provide employment opportunities for other types of construction trades. Given the present land use designations for the project site, the proposed projects are consistent with State growth objectives. The proposed projects would contribute toward increased

employment, income and job choice opportunities for Honolulu/Oahu residents, thereby leading to improved living standards for those residents. The development of the proposed projects would also increase the opportunities to control the working conditions of the businesses that would be located within and/or service the projects, increase the business opportunities for businesses having favorable financial multiplier effects and provide a climate conducive to the expansion of existing businesses and the creation of new business.

226-8 Objective and policies for the economy - visitor industry

Objective:

(a) Planning for the State's economy with regard to the visitor industry shall be directed towards achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaii's economy.

Policies:

(b)(1) Support and assist in the promotion of Hawaii's visitor attractions and facilities.

(b)(2) Ensure that visitor industry activities are in keeping with the social, economic and physical needs and aspirations of Hawaii's people.

(b)(4) Encourage cooperation between the public and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.

(b)(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.

(b)(6) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the visitor industry.

(b)(7) Foster a recognition of the contribution of the visitor industry to Hawaii's economy and the need to perpetuate the aloha spirit.

Response: The proposed projects are in keeping with and would assist in attaining the above stated objectives and policies by providing facilities to service Hawaii's visitor

industry; provide facilities that are in keeping with the social, economic and physical needs and aspirations of Hawaii's people; provide facilities that are well designed to adequately serve the visitor industry as well as residents of Hawaii while being sensitive to neighboring activities and communities; provide new job opportunities and steady employment; and further the policy of providing opportunities for Hawaii's people to obtain job training and allow for upward mobility within the visitor industry. The proposed developments would offer short-term and long-term employment to residents of the State and Honolulu/Oahu and would contribute to sustaining the level of construction activity in the State. As noted in Chapter II, the proposed projects are being carefully planned and developed, with extensive public input, to meet existing and future market demands and the projects would provide a diverse range of employment opportunities within the region. Similarly, the projects are being planned to aid in fostering a recognition of the positive contribution made by the visitor industry to the State's economy and the need to perpetuate the aloha spirit.

226-10 Objectives and policies for the economy - potential growth activities

Objective:

(a) Planning for the State's economy with regard to potential growth activities shall be directed towards achievement of the objectives of development and expansion of potential growth activities that serve to increase and diversify Hawaii's economic base.

Policies:

(b)(1) Facilitate investment and employment in economic activities that have the potential for growth such as diversified agriculture, aquaculture, apparel and textile manufacturing, film and television production and energy and marine-related industries.

(b)(2) Expand Hawaii's capacity to attract and service international programs and activities that generate employment for Hawaii's people.

(b)(3) Enhance and promote Hawaii's role as a center for international relations, trade, finance, services, technology, education, culture and the arts.

(b)(5) Promote Hawaii's geographic, environmental, social and technological advantages to attract new economic activities into the State.

(b)(6) Provide public incentives and encourage private initiative to attract new industries that best support Hawaii's social, economic, physical and environmental objectives.

Response: The proposed projects would assist in the achievement of the above State objectives and policies by providing facilities that directly respond to present needs and forecast increased aircraft operations and passenger levels. These increases are expected to result in the promotion of the growth of diversified agriculture and aquaculture; encourage existing business to expand and provide the impetus for the creation of new businesses centered around aviation-related activities; assist in enhancing and promoting Hawaii's role as a center for international and domestic relations, trade, finance, services and technology; promote the State's geographic, environmental, social and technological advantages; and development of the proposed projects would represent the extent of public incentives required to encourage the private interests to utilize the planned facilities, thereby supporting the State's social, economic, physical and environmental objectives.

226-14 Objectives and policies for facility systems - in general

Objectives:

(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal and energy and telecommunication systems that support statewide social, economic and physical objectives.

Policies:

(a)(1) Accommodate the needs of Hawaii's people through the coordination of facility systems and capital improvement priorities in consonance with State and county plans.

(a)(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.

(a)(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.

(a)(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction and maintenance of facility systems.

Response: The proposed projects have been proposed in response to present and forecast needs and are in consonance with existing and planned State and county plans; assist in providing the air transportation facilities required to serve Hawaii's people and visitors; will be supported through airport user fees; and will be financed through airport user fees and airport bond issues. The proposed projects will aid in allowing the airport to operate in an economical and efficient manner, thereby reducing maintenance costs.

226-17 Objectives and policies for facility systems - transportation

Objectives:

(a) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:

(a)(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe and convenient movement of people and goods.

(a)(2) A statewide transportation system consistent with planned growth objectives throughout the State.

Policies:

(b)(1) Design, program and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter.

(b)(2) Coordinate State, county, federal and private transportation activities and programs toward the achievement of statewide objectives.

(b)(6) Encourage transportation systems that serve to accommodate present and future development needs of communities.

(b)(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs.

(b)(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification.

(b)(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment.

Response: The proposed projects are consonant with on-going and planned State and county projects to assist in promoting statewide economic growth and diversification and are being designed to be sensitive to the needs of the affected community and quality of the area's environment. As noted previously in this chapter, the proposed project would provide short- and long term employment and economic opportunities. Also, as noted previously, the proposed projects are being planned and designed to complement existing and under construction airport and harbor facilities in the immediate area. The proposed projects will be connected to and integrated with an intra-airport transportation system as well as the City and County of Honolulu rapid transit system; and provide the impetus for public and private development of increased cargo handling facilities.

1.1.2 Part II. Planning, Coordinating and Implementation

As indicated previously, this part of the Hawaii State Plan pertains to the administrative structure and implementation process of the Plan. As such, comments are not deemed appropriate.

1.1.3 Part III. Priority Guidelines

The purpose of this part of the Plan is to establish overall priority guidelines to address areas of statewide concern. The Plan notes (Section 226-102) that the State shall strive to improve the quality of life for Hawaii's present and future population through the pursuit of desirable courses of action in five major areas of statewide concern which merit priority attention: economic development, population growth and land resource management, affordable housing, crime and criminal justice and quality education. The priority guidelines applicable to the proposed project are discussed below:

226-18 Objectives and Policies for Facility Systems - Energy/Telecommunications

Objectives:

(a) Planning for the State's facility systems with regard to energy/telecommunication shall be directed towards the achievement of the following objectives:

(a)(1) Dependable, efficient, and economical statewide energy and telecommunication systems capable of supporting the needs of the people.

(a)(2) Increased energy self-sufficiency.

Policies:

(b) To achieve the energy/telecommunication objectives, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable power and telecommunication services to accommodate demand.

(c) To further achieve the energy objectives, it shall be the policy of this State to:

(c)(1) Support research and development as well as promote the use of renewable energy sources.

(c)(2) Ensure a sufficient supply of energy to enable power systems to support the demands of growth.

(c)(3) Promote prudent use of power and fuel supplies through conservation measures including education and energy-efficient practices and technologies.

(c)(4) Ensure that the development or expansion of power systems and sources adequately consider environmental, public health, and safety concerns, and resource limitations.

(d) To further achieve the telecommunication objective, it shall be the policy of this State to:

(d)(1) Facilitate research and development of telecommunication systems and resources.

(d)(2) Encourage public and private sector efforts to develop means for adequate, ongoing telecommunication planning.

(d)(3) Promote efficient management and use of existing telecommunication systems and services.

(d)(4) Facilitate the development of education and training of telecommunication personnel.

Response: A significant feature of the ongoing planning process is to ensure adequate, economical and dependable power and telecommunication systems throughout the airport area. Energy conservation measures are being incorporated into new facilities design through selection of appropriate technologies, equipment and operating practices.

226-103 Economic Priority Guidelines

(a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawaii's people and achieve a stable and diversified economy:

(a)(1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.

(a)(8) Provide public incentives and encourage private initiative to develop and attract industries which promise long-term growth potentials and which have the following characteristics:

(a)(8)(A) An industry that can take advantage of Hawaii's unique location and available physical and human resources.

(a)(8)(B) A clean industry that would have minimal adverse impacts on Hawaii's environment.

(a)(8)(D) An industry that would provide reasonable income and steady employment.

(a)(10) Enhance the quality of Hawaii's labor force and develop and maintain career opportunities for Hawaii's people through the following actions:

(b) Priority guidelines to promote the economic health and quality of the visitor industry:

(f) Priority guidelines for energy use and development:

(f)(3) Provide incentives to encourage the use of energy conserving technology in residential, industrial and other buildings.

Response: The proposed projects would assist in meeting the above stated guidelines by allowing private investment in facilities that would assist in expanding existing businesses as well as provide the impetus for new businesses to be created to serve an expanded market; assist in the development of industries that can take advantage of Hawaii's location and available physical and human resources; encourage expansion of a clean industries that would have minimal adverse impacts on Hawaii's environment; assist industries that provide a reasonable income and steady employment; and provide the market for and stimulus needed to increase vocational training in an area where growth is desired and feasible. With regard to promoting the economic health and quality of the visitor industry, the proposed projects would provide the necessary facilities to minimize inconveniences and foster pleasant airport experiences. Additionally, the projects will allow the expenditure of private capital to upgrade and improve the quality of facilities in an area where they are now lacking. The proposed projects would also aid in the attainment of the energy related guidelines through the energy conservation measures that would be taken during the design, construction and operation of facilities.

1.2 STATE FUNCTIONAL PLANS

The Hawaii State Plan directs the appropriate State agencies to prepare functional plans for their respective program areas. There are twelve State Functional Plans that serve as the primary implementing vehicle for the goals, objectives and policies of the Hawaii State Plan. It is noted that many of the State Functional Plans are currently under review and are being revised to reflect present and forecast future conditions. However, the following sections of the listed State Functional Plans that are in effect are directly applicable to the proposed project:

1.2.1 State Employment Functional Plan (1989)

The State Employment Functional Plan, the preparation of which was coordinated by the Department of Labor and Industrial Relations, lists four major issue areas under which specific objectives have been defined. These issue areas and objectives are as follows:

ISSUE AREA I. EDUCATION AND PREPARATION SERVICES FOR EMPLOYMENT

Objectives:

I.A Improve the qualifications of entry level workers and their transition to employment.

I.B Develop and deliver education, training and related services to ensure and maintain a quality and competitive workforce.

ISSUE AREA II. JOB PLACEMENT

Objective:

II.A Improve labor exchange.

ISSUE AREA III. QUALITY OF WORK LIFE

Objective:

III.A Improve the quality of life for workers and families.

ISSUE AREA IV. EMPLOYMENT PLANNING INFORMATION AND EMPLOYMENT COORDINATION

Objective:

IV.A Improve planning of economic development, employment and training activities.

Under each of the above listed objectives are defined policies to implement the objectives. The implementation actions are primarily the responsibility of the Department of Industrial Labor Relations (DILR) with assistance from other agencies and groups.

Response: The proposed projects are generally in concert with the objectives of the State Employment Functional Plan in that new jobs will be created and/or others, such as in construction, continued for a period of time. By providing additional employment opportunities in several areas the proposed projects would be one more element of the

Response: While specific building designs have not been completed, the proposed projects will adhere to energy conservation standards whenever possible. Elements of energy conservation that may be incorporated into the project include the use of heat recovery pumps and the use of energy conservation lighting systems. Construction of the Central Chiller System is directly responsive to energy conservation goals. Construction of the APM System, Engine Runup Pad, the South Ramp Aircraft Wash Pad and installation of the preconditioned air systems at the Overseas Terminal Hardstands will contribute to conservation of petroleum-based energy supplies. Design of the New Electrical Power Substations and Distribution Systems will be done in such a manner as to further the Plan's goals in the areas of reliability, efficiency and conservation of resources.

1.2.3 State Health Functional Plan (1989)

The State Health Functional Plan identifies four major priority issue areas on which the plan focuses. These are (1) preventive health, (2) access to health care, (3) environmental protection, and (4) internal administrative issues. Of these four, access to health care and the environmental protection issue are the most relevant to the proposed project.

The objectives and policies of the DOH will be implemented through programs that will include development and implementation of a comprehensive air toxic control program; development and implementation of a comprehensive solid and hazardous waste management program; development and implementation of a comprehensive recreational water quality monitoring strategy; development and implementation of a non-point source pollution program to protect recreational and other surface waters; development and implementation of an indoor air pollution control program; and development and implementation of a groundwater protection program including groundwater monitoring, safe drinking water and underground injection control. These actions, in concert with existing duties and responsibilities of the DOH, form the primary environmental protection elements of the department.

Response: The proposed projects will be in compliance with applicable DOH environmental protection rules and regulations as well as those established by federal and City and County agencies. In addition, applicable DOH permit/approval requirements will

EIS PREPARATION NOTICE

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
JOHN K. UCHIMA
RONALD N. HIRANO
DAN T. KOCHI
JEANNE K. SCHULTZ

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813

IN REPLY REFER TO:

AIR-EK
90.1078

JAN 17 1990

Dr. Marvin Miura, Director
Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813-2910

Dear Dr. Miura:

Subject: Environmental Assessment/Determination and Environmental Impact Statement Preparation Notice Honolulu International Airport Master Plan - 2010 TMK's 1-1-01; 1-1-02; 1-1-03; 1-1-04; 1-1-14; 1-1-15; 1-1-16 and 1-1-70

The Department of Transportation has determined that an Environmental Impact Statement, per the provisions of Chapter 343, Hawaii Revised Statutes and Title 11, Department of Health, Chapter 200 is required for proposed improvements to Honolulu International Airport. This determination has been made because the proposed projects individually and/or cumulatively may have significant impacts on the environment. In this regard, provided herewith are four (4) copies of the following items:

1. OEQC Form for Publication of EIS Documents in the OEQC Bulletin.

2. Department of Transportation, Airports Division, staff Environmental Assessment/Determination.

3. Environmental Assessment for Honolulu International Airport Master Plan - 2010.

Item No. 2 has been adopted by the Department of Transportation, Airports Division as the EIS Preparation Notice.

Should you have any questions regarding the above please contact Mr. Owen Miyamoto, Chief, Airports Division.

Very truly yours,

Edward Y. Hirata
Director of Transportation

Enclosures

bcc: Edward K. Noda and Associates, Inc.

OEQC FORM FOR PUBLICATION OF EIS DOCUMENTS IN THE OEQC BULLETIN

Project title: Honolulu International Airport Master Plan 2010

District: Honolulu
Island: Oahu
Acreage: N/A

Tax map key numbers: 1-1-01; 1-1-02; 1-1-03; 1-1-04; 1-1-14; 1-1-15; 1-1-16; and 1-1-70

TO BE FILLED OUT BY THE AGENCY ONLY:

Type of action:
X Agency
__ Applicant

Please check all that apply. This document is a:

Chapter 205A document
__ EIS Preparation Notice
__ Draft EIS
__ Final EIS

NEPA document
__ FONSI
__ Notice of Preparation (NOP)
__ Draft EIS
__ Final EIS

Chapter 343 document
__ Negative Declaration
X EIS Preparation Notice
__ Draft EIS
__ Final EIS
__ Acceptance Notice

OEQC must receive 4 copies of the environmental assessment, 60 of the draft EIS, and 25 of the final EIS. Proposing agencies or applicants should deliver an appropriate number of draft and final EISs to the accepting authority before submitting copies to OEQC.

Accepting authority's address: Governor, State of Hawaii
State Capitol Building
Honolulu, Hawaii 96813

Contact: Phone:

Proposing agency or applicant's address: Department of Transportation
869 Punchbowl Street
Honolulu, Hawaii 96813

Contact: Edward Y. Hirata Phone: (808) 548-3205

Consultant's address: Edward K. Noda and Associates, Inc.
615 Piikoi Street, Suite 1000
Honolulu, Hawaii 96814

Contact: James G. Dittmar Phone: (808) 533-0553

Summary of the proposed action or project to be published in the bulletin. Please use complete sentences and write plainly and clearly. The description should be brief, but sufficiently detailed so that the full impact of the action can be determined.

The State of Hawaii, Department of Transportation, Airports Division, is proposing several interrelated Honolulu International Airport projects over the next twenty-year period. The major projects will include the following: Construct Designated Highjack Hardstand; Improve/Expand Overseas Terminal and Aprons; Modify Central Concourse Gates for International Arrivals; Construct New Interisland Terminal and Apron; Construct North Ramp Commuter Facility; Relocate North Ramp and Diamond Head Service Court Tenants and Construct New International Terminal Building (ITB); Relocate HIA Satellite Fuel Farm; Construct South Ramp Facilities; Construct Ramp Service Road RW4-22; Install Automated Passenger Ride System; Expand/Upgrade Base Maintenance Facility; Acquire Land for Airport Use; Relocate North Ramp ARFF Station; Construct Airport Hotel/Overseas Parking Structure; Construct Additional Parking Structure; Construct Link to Honolulu Rapid Transit System; Construct Central Chiller Plant;Construct New Electrical Power Substation and Distribution System; Reroute Aolele Street - Provide New Ground Level East Access Roads; Construct Engine Runup Hush House; Install Microwave Landing System (MLS); Construct New Interisland Aircraft Maintenance and Cargo Facilities Subdivision and Realign Taxiways; and Hydrocarbon Remediation Project.

Master Planning and preliminary engineering work are underway for some of the projects listed above. The Interisland Terminal Project, International Terminal Building and portions of the South Ramp projects have been the subjects of separate Environmental Assessments.

Please check all that apply. Characteristics that made this action subject to the EIS law:

- X Use of state or county lands or funds
- ___ Use of conservation district lands
- ___ Use of shoreline setback area
- ___ Use of historic site or district
- ___ Use of lands in the Waikiki Special District
- ___ Amendment to a county general plan
- ___ Reclassification of conservation lands
- ___ Construction or modification of helicopter facilities
- ___ Other

Estimated project cost: (Million Dollars)

200	Federal funds
1,689	State funds
-0-	County funds
200	Private funds
2,089	TOTAL

Document preparation cost:

	Environmental assessment
	Draft EIS
	Final EIS
	Supplemental final EIS
	TOTAL

CONSULTED PARTY REQUEST

DEPARTMENT OF THE NAVY
COMMANDER
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860-5020

IN REPLY REFER TO:

5090
Ser 00F2/650
27 FEB 1990

Mr. James G. Dittmar
Edward K. Noda and Associates, Inc.
615 Piikoi Street, Suite 1000
Honolulu, Hawaii 96814

Dear Mr. Dittmar:

HONOLULU INTERNATIONAL AIRPORT MASTER PLAN

Request Base Civil Engineer, Naval Base, Pearl Harbor, be a consulting party on all environmental impact statements for proposed Honolulu International Airport projects as listed in the Office of Environmental Quality Control Bulletin of February 8, 1990.

Sincerely,

W. K. Liu

W. K. LIU
Assistant Base Civil Engineer
By direction of
the Commander

RECEIVED
FEB 28 1990
EDWARD K. NODA & ASSOCIATES

Edward K. Noda
and
Associates, Inc.

Oceanographic
Engineers
and
Environmental
Consultants

Engineering
Planning
Surveys
Computer
Modeling

615 Piikoi Street
Suite 1000
Honolulu, Hawaii
96814

Telephone
(808) 533-0553
Facsimile
(808) 524-1126

March 1, 1990

Base Civil Engineer
Naval Base Pearl Harbor
Box 110
Pearl Harbor, Hawaii 96860-5020

Subject: Environmental Assessment
Honolulu International Airport
Master Plan 2010

Gentlemen:

Thank you for your letter of 27 February 1990. Attached for your review and comment is the Environmental Assessment for the subject project. We would appreciate receiving your comments by March 10, 1990.

Should there be any questions, please contact us.

Very truly yours,

James G. Dittmar
Executive Vice President

Attachment

MINUTES OF TECHNICAL ADVISORY COMMITTEE MEETING

SIGN-IN SHEET

Technical Advisory Committee Meeting
Honolulu International Airport
Master Plan 2010

February 21, 1990
2:00 p.m.
Garden Conference Room
Honolulu International Airport

NAME	ORGANIZATION	PHONE
Gregory C. Goetz	Edward K. Noda & Assoc.	533-0553
Alvin Chong	Pacific Planning	735-0242
George Fernandes	HECO	543-4752
Dick Beamer	Ewa Beach Comm. Assoc.	689-0651
Stanley Uehara	PACDIVNAVFACENGCOM	474-5907
Ed Uchida	DOT-STP	548-6526
Dr. Kenn Sprague	BWS	527-6161
Lawrence Chun	Edward K. Noda & Assoc.	533-0553
Rod Dickson	HUD	541-1334
Pete Beckner	FAA	836-0615
George Read	GACH	948-8996
Gordon Lum	OMPO	548-2638
Terry Brothers	Wilbur Smith	949-7334
Wally Nishigata	DOT-A	836-6407
Bill Buevens	Edward K. Noda & Assoc.	533-0553
Dan Tanaka	DOT-STP	548-6526
Charles Prentiss	C&C DGP	527-6073
Timothy A. Skinner	USAF	449-7623
W. R. Grimes	LAT	836-1381
R. W. Barringer	LAT	833-9994
AL Limatoc	FAA TWR	836-1761
Don Maddison	Peat Marwick	(415) 571-7722
David Welhouse	FAA	541-1243
Arven Saunders	HAC	949-8989
Capt. Tim Flournoy	ALPA	488-2164
Jim Dittmar	Edward K. Noda & Assoc.	533-0553
Brian Ishii	Edward K. Noda & Assoc.	533-0553

HONOLULU INTERNATIONAL AIRPORT

Bob Burns ____________; ________________, ________________, Ewa Beach and ______________ Air Force Base, Ted Fortnoy, Airline Pilots Association, Hawaii ________ State; George Fernandez, Hawaiian Electric; ________________, Dan Tonaka, ________ Education ______________; Ken __________, ______________; Pete ______________, Computer __________; Marvin Saunders, Honolulu Airlines Committee; ____________, City & County Planning ____________; George Reef, General Aviation Council; Brian Ishii, Edward K. Noda; ______________, ____________; ______________, ______________; Bill Edwards, Edwards ________________; ____________, ______________; ______________, ______________; John ____________, Maui; Jerry Carruthers, ______________; Brian Chung, ________________; (can't hear the rest).

K: Thank you all for coming. We're going to have a public information meeting tonight at 7; whatever we cover here today is going to be covered tonight also. So at this time, I'd like to turn over the presentation to Jim Ditmar. Jim?

JD: Let's go over real quick right now. We need to settle the forecast we're looking at right now for Honolulu International Airport. Overseas international market, interisland ____________________. As you can see and we talked about it earlier, the overseas international market is coming into a bigger share of the whole pie. These are basically the figures that are driving the airport ____________ value. Here's the number used in the 1988 forecast ________________.

The scheduling ___________ update, not actually update but should be ________________. We try and get everything done by September of this year. The basic forecast ____________ now will be ________________ ______________ has to be worked on. _____________ _____________, youth facilities, ________________, financial capabilities play a big part in the airport; this is being worked on. The airport access plan, we planned a totally new traffic study for the airport, looking at, in fact, the airport and also Keehi Lagoon as well as ________________. The utility plant is also in the way. We have a problem that we know right now along the Keehi Lagoon side, is the sewage capacity and access into Sand Island. So sewage plants, we're looking at that.

And also we revised the __________ layout plan. We assume about August of this year, we'll be finishing off the documents. We'll be doing also for the first time for HIA a codematic GIS at the State level. This is the first meeting

we'll have; we'll probably 2 or 3 more meetings and a public hearing as we get farther down the road.

This is where we're going to right now. Some of the items we're going to be looking at on here is basically a list of items ________________ and possible locations of ________________. In looking at constructing ________________, ________________ located that facility down in here next to the ______________. This appears to be the best location for access, security and whatever else we need for hijack. I hope we don't have one but this is where we're talking about locating it, down here right now. This is close to the fire station, get good clearance around the facility; this is where we're looking at.

This building is also part of the Ewa concourse over on this side right here. As part of the expansion the Air Force Division is negotiating with Hickam Air Force Base to acquire approximately 22.88 acres from Hickam Air Force Base over here for an approximate cost of $26.9 million. The money will not be transferred directly to Hickam Air Force Base; the State will in turn built $26.9 million worth of facilities at Hickam Air Force Base. It is accepted that this project will go forward this year; by approximately September the State should have the deed to the property, site work should begin.

Then the interisland maintenance facilities can be relocated over here, allows for the relocation of the taxiway, then we can start on the Ewa ____________. And also these concourse gates in here are now being modified and can be used for international holding. In constructing the new interisland terminal facility which you see going on here right now, the new north ramp commuter facility in this area right here, this would be home community passengers. Additionally this section here and administrative facilities located over here.

We've got a new international terminal ________________ in the Diamond Head ____________. Also, if you look back and stand above the Diamond Head concourse. As part of this overall airport planning the decision was made to relocate fuel farm away from the public down here in Keehi Lagoon. This as you know, is a satellite fuel storage and the majority of the fuel storage over here and along Sand Island Access Road. Basically the fuel storage is provided here and sufficient enough to maintain fuel on the airport unless ______________. Future fuel storage will also be in here.

As part of this whole complex construction of a new south ramp facility to general aviation and commuter airlines ________________. A number of other facilities which will be located in this general area.

We're also putting in a number of ramp service roads which would be around the entrance side here and also one around this area here. You'll pull out people _______________, air fields all head north __________________. One of these we're looking at is going ____________ automated passenger rides between _______________. Skip that for another. ______________ the facility ____________ in a year. We're eventually looking at moving in this area here.

Clients: The State will be looking at client's land. Honolulu International Airport is unlike most city airports ______________; we've got an awful lot of lagoon out here but not much land. This is the 22.88 acres the State will acquire. The State is also working with the FAA to look at acquiring some surplus Kapalama land which can be used for future fuel storage. And perhaps relocate the __________________ out in this area here. The State is working it now in acquiring this area here as an active, ongoing program.

The existing fire fighting facility right in here will be relocated over here. Additional parking structures _____________ going in this area here. Parking is still a major problem at the airport; there's also a parking study going on right now. Hopefully in 3 to 4 months, we'll have better answers for long term projects __________________.

We've been also looking for a link to Honolulu Rapid Transit system. The government is there back in Washington right now pushing. The more mundane things like we've got a central ____________ that needs to be done; we've got a new ___________ substation to put in up here, and as I said we're looking at realigning some of the roadways and _______________ that could be looked at on the study.

One thing that has come up that we're taking an active look at is a hush house. Engine runups, we just got through doing a 150 study. The problem with a 150 study is your only addressing a single engine of that noise. Engine runup continues to be a source of annoyance to any people around the airport. _____________ joint effort with Hickam Air Force Base, the State's looking at locating a hush house noise compression facility ____________ up to a 747 C5A size _______ engine run ups. It won't be a complete hush house where it's enclosed; it's probably more of a noise compression facility which we could see a 10 or 15 dba reduction on the outside.

So that's part of an ongoing study. It is probable that there would not be enough land within Honolulu Airport. The State of Hawaii may have to relook, one of the things we'll be looking at with the Airport is if it's possible to locate on the airport side versus jointly.

Also we've been pushing the FAA for microwave landing system. We've got interisland, air traffic storage here will be going in. Part of the overall environmental __________ of the airport was a hydrocarbon study going on. As you know, many airports __________ off the Hickam Air Force Base.

To give you a better idea of what's going to be happening somewhere in here. This mainland facility expanded __________ now. This code of pink is the interairport wide system. The name is used in Honolulu Rapid Lines. (Can't understand) This is the interisland terminal connected to the public facility lanes. These are private facilities over here, where the interisland carrier ________________. The planning now calls for ______________________.

I think that pretty well covers anything we'll be looking at over the next 4 to 5 months.

D: We can now open it up for discussion. Yes.

T: __________, what is the proposed location of the ____________.

D: Right now we don't have a location set aside but we're going to start negotiating with the Air Force, to see if we can get some their lands to put the ____________.

T: Do you think that would be the first step to get airport land rather than to get what the State already has?

D: Yeah, I think the State.....we looked at that before, but.....

JD: The problem we have is we don't have.....this is it right here. We're talking something the size of a 747400. The airport has existing hush houses right now; we got 15. We're looking for something that is......the greatest use for hush houses would probably be the interisland aircraft. Another ________________ measure for the overseas carriers; occassionally we do have a need for engine runups. We're doing it out here on the Reef Runway right now. We'll probably end up putting ____________ pads right here.

: I forgot to identify myself. I'm from the FAA ________________. We need the hush houses more for the 4 engine, wide bodied jets than do the large carriers because of the impact on the airport.

: Part of the agreement would be Hickam Air Force Base acquires __________ engine run ups would not be allowed by the ____________ aircrafts ______________. We'll have to go somewhere.

: Well we are looking for something large enough to accommodate all classes of aircraft.

: We were thinking about someplace in this area here. I don't know if it's available.

: We had some problems there because of the ____________________ cargo offloaded.

: _________________ just added the idea that it wasn't going to be ____________________________; your reduction of 10 to 15 dcs is not going to be satifactory to the populace out there, but there will be more of a push for it. In an enclosed facility, we can do it. ____. Everybody in our joint uses them in discussing them. I've been trying to get 3 tickets out to the ___________________ but there's where they put in 707s right now. We've been closing and stand outside ....

: For the large aircraft it's going to be expensive to build something fully enclosed.

: For the ___________________, how much blast _______________ area do you have around that?

: I don't know. Basically we just took the existing feature _________________, drew a circle around so we could get equipment around it. We're not looking at that as a blast or something.

: We ask for 3 people criteria. How far away should a blast in the hijack cargo be. We couldn't find it; we tried to pick a wide open spot ___________.

: Obviously I'm concerned because of General Aviation space.

: Right, that's one thing we will look into.

: But you don't anticipate any encroachment on GA space.

: No, I don't see any encroachment.

: I think we're looking at if it did blow off, how far off do you have to be?

: What the airport basically does is put on a situation such as that or whatever, because that insures it outside of that there has been any damage. Once teams have gone in and made sure it's safe, then they can shrink it, but that's the additional response of how the Air Force handles it.

_____________ 2,000 foot radius around the air vent itself and then shrink it.....

: We tried to put one in here but you guys did'nt know.

: Well, maybe that's again, the general may not want to evacuate the 9th hole.

: One more thing, how about the location of the interisland runway for the hush houses.

: One place we've identified right now is out there on the Reef Runway.

: Right, any possibility of hunting or fishing?

: Well that's what we're looking at right now; putting a pad our here.

: I'm talking about the hush house out there.

: The Reef Runway is under FAA criteria.

: The problem is 1,000 foot clearance (cant understand)

: May I ask a question on the financial feasibility report. I know that the chart shows about April 15th through July 15th says the time span recognizing that the financial feasibility study on the international arrivals facility is still pending to be applied on your specific plans for the financial feasibility report.

: Well, it's not completed yet. They're still working on that _________________ land.

: Is this time frames a new time frame for the entire Financial Feasibility or international facitilies and the whole master plan laundry list.

: It's a time frame. The forecast was originally supposed to be done back in December. In fact, ____________ the forecast right now so that meant delay it.

: We haven't moved the Financial Feasibility yet, but we may have to move it back depending on what.....we still haven't gotten all the reports yet.

: Would you mind discussing how you plan to do the Financial Feasibility Study with a consultant.

: (can't understand). .....whereas a detailed financial analysis to look at ________________ the extent of (can't hear, understand).

: Anybody else?

: (can't hear). Last time we ______________, the idea was to preserve ________________, a station here and a station here; 2 stations, yeah. One at the new interisland terminal, one at the ____________ of your _________________. And we were hoping that the City would come it, but I have ____________ they're planning on ______________ next year......(can't hear).

: If you look into the _____________ will be people mover system __________.

: Right now, the people mover system will be on the inside of the security area (can't hear/understand).

: __________ hook up the _____________________.

: The 150 study phase is complete. I looked at the 5-year forecast. From what I can see there is not a significant increase __________ in the aircraft as in the past. We assume that as the aircraft operations increases it ________, the noise probably _________________. We've got the last one in the 150 study ______________________.

: Anybody else have any comments, or......

: Do you see any conflicts with the Harbor Division Keehi Lagoon Point?

: No.....anybody else, or anything else that you want to bring up?

: Is there a plan for a washrack, and if so where's it going to be?

: This washrack over here right now is located _____________, looking down the lagoon. This is the washrack right here.....that's where it's at. The exact ___________ where it's going to be located, that's where it's going to be relocated, I know they're looking at that.

: I think we should look at that.

: There is a location going on for that, I know.

: Yeah, that's a good idea. We should look at it in the plan. Anybody else? Yes, Ed?

Ed: (can't understand)

: We still haven't decided which ____________ they're going to go with right now.

Ed: (can't understand)

: At Salt Lake? Oh, I see.

Ed: Something that you can discuss with the City.

: Yeah, I know at one time they were talking about bringing a ____________ from the Salt Lake Station into the airport. But I'm not sure where it stand now.

Ed: They have a couple of ________________ (can't hear). I have not seen a ____________.

: For the airport? Thank you, Ed. Yes, Al.

Al: With all the increase in traffic, obviously increasing the traffic, I see no increase in any runway space, in any runway in the master plan. Is anyone giving any serious thought to perhaps extending out the runway to ______________________. (couple of people talking at the same time, can't hear or understand)

: It was brought up before, Al, as far the runway or ____________, right now we're not looking at it.

Al: Because I think some of ___________ can be extended. I think we have to take a look in that direction early because like today, there may be times when we have expensive delays out there, and you know, when you're looking at projecting all this increase in activity out here, it's going to become horrendous after awhile.

: Alright, we are doing a Demand Capacity Analysis on this problem here, so we'll be coming out with that. O.k, anybody else, anything else?

: ________________ facilities for air commuter facilities?

: Air commuter facilities.

: Yeah, what about interisland __________________. Put in some _____________________.

: O.k., ________________ commuter facilities from here by the interisland terminals. We plan to put in a taxi type of terminal here, not the commuter but the air taxi type of

facilities for general aviation here. That's why you're seeing 2. But it's not the air commuter terminal. Anybody else? Yes?

: What about the plan for the second general aviation ________________ ______________ (can't hear) general aviation type facilities?

: No, it's not part of this plan but we have an ongoing study to look at general aviation facilities. Anybody else, or any more questions or comments? It not, I'd like to introduce our Airport Administrator, Owen Miyamoto. You want to say a few words, Owen?

OM: No.

: O.k., it not, thank you for coming, and if you want to talk to us one on one, we'll be around here. Tonight we'll be here til 7 o'clock. Oh, yeah, I got the validation for your parking.

MINUTES OF PUBLIC INFORMATIONAL MEETINGS

SIGN-IN SHEET

Public Information Meeting
Honolulu International Airport
Master Plan 2010

February 21, 1990
7:00 p.m.
Garden Conference Room
Honolulu International Airport

NAME	ORGANIZATION	PHONE
Lorrin Ching	K.J.L. Associates	524-0129
Paul Rathers	Aloha Airlines	395-3012
Richard Riegels	Jackson Development	847-2191
Burton Oshiro	Springs, Inc.	833-9494
Gordon G. Santucci	DMI	533-1505
Jeanne K. Schultz	DOT	548-4711
Frank Yanos	Airborne Express	836-2966
John Hill	ITPD	544-0963
Stu G. Lanberman	Honolulu Advertiser	525-8071
Bud Vuillemot	Woodward-Clyde Consultants	531-5462
Curtis Wheeler	Fresh Food HI	833-3664
Tony Tepedino	FAA Security	836-1055
John Omps	John Swift & Son	(609) 354-8181
Ed Brown	General Auto Parts	834-7140
Daniel Hirzeler		536-2136
LaVern Rollet	Leo A. Daly	521-8889
Billy Buchanan	Aloha State Trs.	841-8031
Dennis Takayesu	DOT-A	836-6414
Galen Haneda	HTCO	546-8622
Lance Kajiwara	HTCO	546-3316
Kenneth Wong	GAOS	547-5716
Earl Nozaki	CCSI - Com Consultant	836-6680
Arnel Villanueva	CCSI - Com Consultant	836-6664
Nancy Griffin	Hawaii Business	947-6596
Monte McKeehen	AIDA	833-1304
Martin L. Rutter	Parsons Hawaii	523-5464

SIGN-IN SHEET

Public Information Meeting
Honolulu International Airport
Master Plan 2010

February 21, 1990
7:00 p.m.
Garden Conference Room
Honolulu International Airport

NAME	ORGANIZATION	PHONE
Dexter Kubota	KFC Airport, Inc.	836-7787
Mark Hastert	DOT Tras. Commission	545-2055
Charlotte K. Fuller	Pua Melia Leis	839-0796
Ellarene Yasuhara	Irene's Lei Stand	836-3215
Stan Sekimoto	AIR-OAS	836-6434
Ralph Miller	Honolulu Bus. Mart	523-8084
Jackson Stephens	Sam Chang Architects	521-1077
Damen Wong	46-121 Hinapu St. Kaneohe	235-5634
Vicki Lim	USDA	541-2951
Terry Souza	P.C. Neighborhood Bd.	456-3088
Dennis M. Yamamoto	Abre Xpress, Hilo	1-969-6668
Ernie Kingsley	SerVend of Hawaii	836-0821
Ed Pskowski	Leo A. Daly	521-8889
Tom Kraft	Norpac Fisheries	834-6166
Robert Lew	Host	836-2566
Robert Crowe	Am. Inst. of Arch.	449-1663
Bill Buevens	Edward K. Noda & Assoc.	533-0553
Bobby Pesquira	Hemmeter Aviation	834-7666
Howard C. Geiger	HAL Retired - Mid Inc.	236-0146
Richard A. Brown	Aloha Airlines F.D.	254-4034
Greg Yamamoto	Honolulu Advertiser	525-8079
Ken Richardson	Johnson Controls	845-9742
Bob Joers	Johnson Controls	845-9742
Don Massey	Heath Publishing	(403) 435-5607
John Nadler	Johnson Control	845-9742
Carol Hong	Hong Iwai & Hulbert	524-4900

SIGN-IN SHEET

Public Information Meeting
Honolulu International Airport
Master Plan 2010

February 21, 1990
7:00 p.m.
Garden Conference Room
Honolulu International Airport

NAME	ORGANIZATION	PHONE
Renne Chapman	Haseko (Hawaii)	536-3771
Lindsay Pollock	Hawaiian Airlines	525-6767
Walter Leu	Wilson Okamoto & Assoc.	536-5261
Warren Luke	Industrial Investors, Inc.	521-3626
Louis Pepper	Leo Daly	521-3757
Hugo P. Buehring		732-5674
Joe Furukawa	CCSI	836-6663
S. Ing		531-6984
Francois Iragui	KFC Airport	836-7787
Norman Jong	1829 Mott Smith Drive	536-7897
J. N. Watanabe		544-8300
K. Sudo	Industrial Welding Inc.	836-1776
Rick Phillips	HH&K Planners	545-2055
Frank Deporte	W. T. Yoshimoto Corp.	836-1047
Fred Salassa	Triple F	833-9133
Gail Uyetake	HH&K Planners	545-2055
D. H. Wilham	FAA- FSDO	836-0615
H. O. Adams	AAA, Ltd.	395-8764
Tony Tamura	1451 S. King Street	947-7111
Joanna Leong	Sky Chefs	836-1771
Stan Hirose	2865 Ualena	836-2011
Al Borges	Commercial Shelving	836-3811
J. Borges	Commercial Shelving	836-3811
Henry Latini	Certified Management	836-0911
Don Maddison	KPMG Peat Marwick	(415) 571-7722
Rod Ohira	Star Bulletin	

SIGN-IN SHEET

Public Information Meeting
Honolulu International Airport
Master Plan 2010

February 21, 1990
7:00 p.m.
Garden Conference Room
Honolulu International Airport

NAME	ORGANIZATION	PHONE
Wally Nishigata	DOT-A	836-6407
Patrick S. McMillen	C-21 Kahala Hale	735-7888
Stanley S. Suzuki	Hawaiian Telephone Co.	546-3787
Jim Spears	FAA Security	836-1055
Joel Kennedy	Weiner Associates	523-8802
Paul Yee	E. E. Black	533-7421
Gordon Chapman	Chapman Consulting Serv.	528-5228
Mike Lim	B & F	548-2891
Patricia Shimaru	Okita Kunimitsu	944-6565
Dexter Yee	M&E Pacific	521-3051
Alan Hirota	M&E Pacific	836-6077
Wade Wakayama	Ameron HC&D	848-8263
Bo Jens	KFC	836-7787
Eddie Murai	Clarklift Pacific	839-2708
Ralph Cherry	Commercial Shelving	836-3811
Robert Volpe	Leo A. Daly	521-8889
Jan Gerard	C-21 Kahala	735-7888
Jolen P. Keppeler		538-4151
Kimo McGregor	1594-D Alewa Drive	595-6792
Jim Dittmar	Edward K. Noda & Assoc.	533-0553
Brian Ishii	Edward K. Noda & Assoc.	533-0553

HONOLULU INTERNATIONAL AIRPORT
PUBLIC INFORMATION MEETING
FEBRUARY 21, 1190

MH: Good evening, ladies and gentlemen. It's now 7:09 and I hereby declare the public information meeting open here at Honolulu International Airport Garden Conference Room on February 21, 1990, in accordance with the notice advertised in the Honolulu Star Bulletin and Honolulu Advertiser. My name is Mike Hee, I'm the Commissioner of Transportation. The Commission is appointed by the Governor under Section Chapter 26-19 H.R.S., confirmed by the State Senate. The Commissioner sits in an advisory capacity and assists the Director of Transportation on matters within the jurisdiction of the Department of Transportation.

The purpose of this meeting is to present the Honolulu International Airport 2010 Plan and to afford all persons an opportunity to submit data and discuss orally or in writing matters in respect to this planning project. The agenda for tonight will be as follows:

First, Mr. Owen Miyamoto, Airports Administrator of the Department of Transportation, will make a short presentation on the subject to be discussed. He will then introduce the various consultants working on this project. This will be followed by presentations of the Honolulu Airport 2010 Plan. Thereafter we will receive any questions or statements you may have on these matters.

We are not here tonight to debate or vote on the issues presented here tonight. We're here to bring to you information about the project and the issues of the Department of Transportation which affect our community and through you, to provide the Director of Transportation with benefit of counsel.

The proceedings of this meeting will be recorded. It is important that you speak clearly in stating your questions. We request that your statements be factual, brief, unemotional and free of any political references. In order that each and every one of you may be given a fair opportunity to be heard, we request that you observe the following procedures:

1. If you wish to speak, please raise your hand and when recognized by me, state your name, the organization you represent, if any, then proceed with your question or statement on the subject matter in question.

2. We ask that you limit your question or statement to 5 minutes so that others may have equal opportunity to be

heard. Those who represent large groups or want more time will be given the opportunity to speak further for a reasonable length of time after everyone has been given the chance to speak for the allotted 5 minutes.

We will now get into the details of the project affecting our community. Mr. Miyamoto?

OM: Thank you. Just a few housekeeping items before we get started. One thing, would you please close the door in the back, it would make it much easier for everybody to hear if we close the airport noise out and everybody would be able to hear much easier. Unfortunately, we don't have a microphone tonight. Quite frankly, this is the first time in all of the history of Honolulu International Airport that we've had a turnout like this for a master plan study. Normally we would have maybe about 6 to 10 people. This is the first time that we've had a group of this size that is interested in our project, and I certainly appreciate your turnout, and we'll make sure the next time we have a meeting like this, we'll probably have the HIC or comparable to accommodate the crowd. But seriously, I think we'll open this room, we could quadruple the size of this room by moving the partitions but we really did not plan for this size of a group to hear this project.

My name again is Owen Miyamoto; I'm the Airport Administrator for the Department of Transportation. With me to help me in this presentation is Jeannie Shultz, who represents the Director, she's the Deputy Director from the Department of Transportation. And also from our Department, Wally Nishigata and Dean Nakagawa from our Planning Section in the Airport Engineering Branch. I'll give you more details about these people, these individuals because if you have any questions or concerns following this meeting, I would certainly like you to meet with us individually, call us and so forth, and we'll make sure the information is available. Obviously one of the things that happened is that we ran out of handout materials. We had an agenda and some materials that you could read to supplement the things we'll be telling you tonight, but we ran out of that material. And if you are interested, please leave your name and address with us and we'll be sure to mail this material to you. It consists of the schedule for the project, some forecasts of traffic, the planning issues or the specific items that we want to include in our master plan study and a drawing here of the master plan as it exist today. So this material can be made available to you if you'll just leave your name at the table when you leave tonight.

For this evening's presentation, what I would like to do because obviously with the size of the group that we have here, is that we would prefer that we hear from you. What we

are doing tonight is opening the first phase of a planning study that will update the master plan for the airport. Now as I indicated to you, we've had hearings previously and those hearings that we had were on the prior master plan that we had for the airport. I guess it's a reflection of the rapid growth in air traffic we have here in Honolulu that causes us to do this and make these changes so rapidly. Because if you look back on the history, actually only as recently as 1981 we completed a master plan for the airport that included a detailed study of the traffic forecast of the noise impacts and all of those planning parameters that we have to consider when we prepare a master plan for an airport. But then again in 1988, we took that 1981 plan and updated it again, and the drawing that is included with this agenda is really the master plan as it exists today. It's only 2 years old, not even 2 years old in fact, and it's this master plan that we are looking at for a change and update. This is the reason for our calling this meeting, so that we can get the input from our community that the airport serves.

I recognize that there are some people here that have a very special interest in this master plan because of the potential impact that it could have on their lives and their businesses. One of the things that I want to emphasize is that when we open the floor for questions, there will be certain issues that we cannot answer here tonight. And what we're talking about here is a broad outline of the master plan study and the things that we would include in the update of that master plan.

The agenda calls for several things. I'll go through this very quickly because I don't intend to make a very long presentation. As I mentioned up here the purpose of the program, the schedule is already included in this handout, and what we're looking for is the completion of this study within a certain period of time that is outlined in this report. We hope to have it completed probably by the end of this year, so that we can include all of this comments and input that we will be getting from the meetings that we'll have that are planned ahead of you.

The passenger forecasts that we have are also included in here. We're looking at a potential growth by the year 2010 a total of 37 million passengers in and out of Honolulu International Airport. In 1988 we had a total of 20.2 million passengers at Honolulu International Airport. That's the kind of growth we're looking at to be accommodated by this master plan. There are a whole list of projects that we have in the handout and will be shown on the screen. They go into considerable detail, like the construction of a designated highjack _______________, improving and expanding the overseas terminal, modifying the central concourse, and so forth.

There are several items included in the work that we have given to the consultants to include in the master plan update, and I won't go into detail on those either. That would take all evening to cover.

More importantly, I hope that tonight, if we can, get your comments as to what you feel should be considered as we develop this updated master plan. Some of you have not had a chance to see the drawing that's in the attachment that we have here, and before I open the floor up to questions, I would like to take a little time, it may cause a little bit of confusion because of the number of people that are here, but some of you may want to take a look at the drawings that are on the board on both sides. It's not possible to be seen from the back of the room, but perhaps if you are interested, we could take about 10 minutes for you to come up and look at the drawings and then we will reconvene and then open the floor for any comments and questions that you have.

Before I do that, are there any comments that you want to make as far as the agenda? Yes, sir.

(Can't hear)

Let's take those questions afterwards. I think that's a question related tonight, but that's ________________. So why don't we take 10 minutes and if you'd like to come up, take a look at the drawings, please do so. We've got to get out of the way ___________________.

(Meeting convened)

MH: Let me reconvene meeting and continue with Owen Miyamoto's presentation.

OM: Thank you. Now that you've had a chance to take a look at the drawings, I thought perhaps it might be a good idea to explain some of the major projects that we're considering or added to the master plan or to be reshaped in the master plan as it exist today.

First, on this side we have a layout of the airport itself. The colored areas represent generally the areas that we're looking at. This broad back here is what we call the south ramp of the airport. It includes the areas that are set aside for cargo, aircraft maintenance and general aviation.

This is the Reef Runway here. And the main terminal area is located here. The drawing on this side represents an enlargement of this area in here, and I think that most of the details other than the south ramp are shown on this drawing, so let's take a look at this side.

Beginning on the left hand side is this area here is the area that we are presently negotiating for the acquisition from Hickam Air Force Base. Our present boundary runs roughly this location here. Again, to orient you, the existing inbound terminal is located roughly in this area, Hawaiian Airlines present terminal in here, and the main overseas terminal is here with parking here. We're seated right now in this building right here. So, this is one of the major parts of our project so we can expand the boundaries of the airport to provide space for additional maintenance facilities for the primary and interisland operations. We have additional cargo spaces to be provided in this area; a realignment of the taxiway so that this interisland terminal becomes an integral part of the overseas terminal. And one of the key features of this plan is insulation of an automated people mover system. The line in lavender that you see running through this terminal area will be an automated people mover system that will carry passengers back and forth from any of the gates from overseas side all the way over to the interisland side, and both on the sterile mode as we call it, so that we can handle the international passengers before they are cleared and in a semi-sterile mode for those passengers that are simply cleared for departure, have cleared the normal FAA security requirements and then are carried either to the ticket lobby to the gate or backwards from the gates back to the baggage claim area.

This is the new interisland terminal that is under construction today, consists of ticket lobby, baggage claim and a parking structure immediately above that, all connected into the roadway system leading into the airport as well through concourses that will connect it with the rest of the terminal building.

This feature here is the new parking structure that we're proposing on the Diamond Head side of the existing parking structure. We're planning additional modifications to the central concourse which is located out in that direction, and this large blob here is the new international terminal building. It's about 5 times the size of the present structure that we have which is located roughly in this area and it is designed to accommodate the very rapid growth in international traffic that we're experiencing and expect to continue to increase in the years ahead.

An extension of the concourse in this direction as well as concourses in this direction to provide gates for the arriving aircraft and for the management ____________ loading and unloading at the parking entrances around the terminal building. This area in yellow is the area that we're proposing for acquisition. It is located between Paiea Street and Lagoon Drive, Ualena Street and this is the present mauka

boundary which is on a road we call Aulele Street but it's within the airport. It is this strip here that we're looking for acquiring so that we can add to the airport the facility that would have to be relocated from this area where the International Terminal building is presently being planned and place them in this area. Much of the activities will be things like flight ____________, air cargo facilities that should be located as close as possible to those passenger facilities which they serve.

General aviation that is located here is going to be moved over to the south ramp area as I indicated on the other drawing. This line here represents a perimeter road that will connect the, what we call, north ramp with the south ramp around the area so that the vehicles that traverse the operations area at the airport would be able to move without being impeded by the general public traffic that you find on Lagoon Drive and Aulele Street.

Now with that as a rough outline of what we're talking about for this project, I'd like to open the meeting up to questions as the Chairman has indicated. He will regulate that activity.

MH: Is there anyone with a question, they can raise their hand. O.k., this gentleman here firt. State your name and organization if you represent any.

L: In discussing this master plan, we were wondering about the growth in Westlock, if there's anyting tentative in the master plan to take general aviation away, you know move it out to West Oahu.........

OM: O.k., this gentleman's from the Pearl City Association.....

L: Neighborhood Board.

OM: Neighborhood Board.....and they're concerned about what impact the relocation of general aviation will have on their community.....that's roughly his question......

L: In the future......

OM: In the future. Yes, we are still looking at a location for a reliever airport. By the year 2000 or 2010, in that neighborhood, we expect the traffic at Honolulu International Airport to grow to the point where it's going to cause serious delays in the movement of aircrafts that arrive and depart this airport. In the segment of aviation that will have to be relocated in order to make room for this is probably going to be the general aviation as we have been trying to do over the many, many years previously. We have obviously not been

successful in finding the site that we thought were the best, but we feel that we have potential solutions, either through the use of one of the existing military air fields, or through the use of Dillingham Field which we have today. So, we feel that the situation has a solution. 1) Because the amount of general aviation traffic has declined over the years, it does not represent the potential for mid-air collisions or accidents that could have occured. The technology for air traffic controller has improved to the point where we are comfortable with the situation today; however, and sometimes they're within the next 10 years or 15 years, we have to make a hard decision as to who will continue to operate at Honolulu International Airport.

Specially to your question, perhaps to be moved to Barber's Point. That is one of the site that we still consider to potentially in location for general aviation as a reliever airport.

MH: Excuse me for standing , I have a real plane problem sitting down. There was a gentleman on the other side who raised his hand?

R: Ralph _______________, Honolulu Regency Park.

MH: Hi, Ralph.

R: What's your time table for this ______________________.

OM: Ralph, you know, this project is underway today, and we expect this to be, the interisland terminal to be completed in 1992. But we're shooting for a target for the international terminal building somewhere in the neighborhood of 1993 for initial phase, that will be the ground floor for international inspection services and a couple years later to fully complete the building which will include the upper level for ticket lobbies and so forth. Our main thrust is to find relief for international inspection functions, and that will require development of the ground floor of this building as quickly as possible. Those are the kind of time frames we're talking about. The ride system is an integral part of the success of this building so we're looking for the completion of at least a part of a ride system to serve international traffic by 1993, 1994--somewhere in that time frame.

MH: There's a question in the middle here. Yes, sir?

D: I'm Dick ______________ from _____________ Development. Can you state your long range plans in some detail or as much as you can in the south ramp area and how is that organized?

OM: I don't know if you've been following the news, but every time I go to Maui or Kauai, Kona hasn't been bad, but some of the neighbor islands have been rather reluctant about receiving our suggestions, like ______________ we could lighten the load at Honolulu by distributing some of it to the neighbor islands. That is obviously one of the solutions and something that even the airlines and the people that are involved in the tourist industry, feel this is the next growth area for tourism. We cannot continue to pump people into Honolulu at the rate we're going forever, because we're going to reach some point where it's just beyond our capability of handling that many people. And so the next growth area represents the neighbor islands. So far as plans, yes, we have completed the master plan for Keahole Airport on Kona, completed environmental studies, we're in the process of preparing the plans for the construction of the extension of the runway to 11,000 feet and for the construction of overseas terminal building which will be completed in 1992.

All of this is being designed primarily for service between Hawaii and the West Coast. But obviously with a runway that long, it could also be used for international traffic. Now that has a whole new implication because it means moving Federal inspection services through Keahole to process the passengers.

Kahului is also being studied for potential growth into a much larger facility. Right now, the runway's about 7,000 feet long. We have a plan to extend it to 10,500 feet but we have not completed environmental studies. Secondly, the community is not in support, not in as close support as it was in Kona. Kona we had very little opposition to the proposal to extend the runway there. In Kahului because of the problems with the infrastructure there, the roads, the utilities, the lack of services and so forth, the crowding that has already occurred with the interisland service, the relatively limited amount of domestic overseas service, the community there is not as receptive to the idea, so we feel that we're going to have a rough road ahead of us to find support for this project to expand the airport there. However, in terms of potential ________________ the neighbor islands from an international aspect, Maui seems to be the one most of the airlines looks to be the most attractive. But even if we're able to get this, get the projects built, to get community support, and to get the airlines to agree to serve these neighbor island airports, it will not have much of an impact on what happens here. We expect the traffic to continue to grow, the forecast that we're making was based on certain amount of leaking to the neighbor islands but not enough to make a significant impact on the growth here in Honolulu.

MH: Another question, please. The gentleman......

: (can't hear question)

OM: A couple of things that occurred in a meeting that we had today. The whole process of planning includes not only public meetings like this, but also a technical committee that we've put together to get comments about, just like questions like you asked. And one of the interesting things that was raised was whether or not we could improve the flow of traffic since we're going to move General Aviation to this area. Now, one of the things that was suggested is that __________ right, there are 2 runways here. The runway that is on the right side closest to this area be used for General Aviation, so that we would have General Aviation using 4 right, and extend 4 left so that we could use that for the overseas traffic so that they could land and go directly into the terminal area. That is the kind of ideas we're kicking around and will be included in our consideration for the development of the master plan. But the south ramp itself by putting General Aviation simplifies our problem considerably. It makes a separate problem for air traffic control but I think the area is improving.

: But on the flight pattern, is there flying over the zoned area?

OM: No, no....it will not. What I'm talking about is light aircraft using that runway for takeoffs as they do now, so they'll be able to easily clear seeing a smaller airplane. But we will not use these runways for DC10s, 747s, 707s, or any of the larger jet aircrafts. In fact, right now, we have a restriction on its use so that they're not allowed to use it. Even if we extend that runway, we'll continue that restriction because moving the runway out in this direction will still place the takeoff path over the city, which would not be acceptable.

MH: Another question, please.

W: ___________ Wong with a couple of questions. First, has the Legislature funded the department to require a ________________. Second, if you cannot get all of the money that you want for all of your projects, what priority is that ______________ ________________?

OM: We're assuming that there will be complete funding for this project. We've already gone to the Legislature for a supplemental budget. Now obviously, if we have to go through that process of every 2 years making requests of the Legislature for the funds. We have funds today for acquisition; in fact, we've started a discussion with some of the tenants that are prepared to move out of the areas, and

we've been looking at the possibility of early acquisition of some of the properties. But our priority is this area, the central.....because as I mentioned before, this is the area that we need immediately for that work, and then we will continue to work with the Legislature to be sure that the balance of the funding is available.

MH: Another question, please. Anyone else.....sir?

: __________ of Airborne Express. You mentioned air cargo and stuff, I'm assuming that you mean ______________ ______________, my question is how about the smaller air express comes in, air freight forwarder, do you have space allocated for that kind of ______________?

OM: Yup.....previously we have never included the forwarders in the airport area; however, we feel that again, we could probably provide a more efficient service to your customers as well as to the people who use the airport by allowing forwarders to be on the airport. So this is an area that we are considering for potential use by forwarders on the south ramp. But remember again, we mentioned United and American, actually United and American cargo facilities are really located in this area here, not on the south ramp. Federal Express, United Parcel, those that offer all cargo type aircraft will be located on the south ramp.

: What do you see ______________ __________________ air freight forwarders (can't understand) in 1992 __________________.

OM: Possibly, yeah. One of the figures that some of the area on the south ramp that's used for employee parking, we hope to get that out as quickly as possible so that would free up areas for forwarders and others that could pay the rent that we expect.

MH: Another question? Yes, m'am?

IN: Irene Nakahara, I'm __________________. I just want to know when the completion of the new lei stand.

OM: We just got word, as Jaimie Shultz gave us the good news today, that the funds were released today by the Governor for the design of the new lei stand. That's why if we have the design available, that's why Roger of PFC was involved in the project, what would be the schedule for completion of the lei stand relocation.

R: March 1991.

OM: March 1991.

IN: Another question, may I? Are the lei stands to be the only tenants of the ____________ ___________ that is planned?

OM: That's right, that is our first priority.

IN: That is your first priority. (can't understand).

MH: Another question. The gentleman in the green.

TP: Tony Pasquire from Hamlin Aviation. Lockheed ____________ is going to be relocated in the future _________, and with the expansion of the terminal and the south ramp activity, when is the hydrogen system going to be hooked up to the new location _________?

OM: O.k., the location that we're looking at for the satellite __________ farm is here, roughly in that area. And that right adjacent to the existing fuel lines that come across Keehi Lagoon from Sand Island and also connects to the energy corridor that goes to Barber's Point. From this point there will be a line that continues on and serves the ramp areas in this area here. For the immediate plans, we have a project to relocate the existing fuel line that runs under the construction area, comes down this street and we'll be moving it so that it goes around the construction area and connects back to the terminal ramp area. But that's how the hydrogen will be running around this way, along an energy corridor over here to the satellite farm and then out even to the bulk storage areas in the industrial area. Ultimately, that will be relocated to Barber's Point to come down the energy corridor that comes into the airport from this direction.

: I'm pretty sure ______________ is going to be a major factor in the master plan, what is the ____________ for ____________ fuel pumps, roughly?

OM: Roughly about maybe 3 or 4 years.....

: From now?

OM: Yeah.

: Would the new location of _________ fuel pump, would the approach pattern or departure pattern of __________ or right, don't you think that's kind of too close to the runway?

OM: We don't think so.

: I'm just kind of curious because of the proximity of the approach pattern depending on the wind conditions, versus millions of gallons of storage tanks. I understand and I know for a fact that in Los Angeles, they do have it.

OM: You notice that, yes, it is close to the runway but there is a defined clear zone that is over here for runway 8 left, and another clear zone out here, so it's right between those clear zones. It is not within the clear zone itself. So we don't think that's a problem.

: So 2, 3 years from now, ______________ relocated and perhaps another 2 or 3 years after that, or perhaps let me take it back, 2, 3 ___________ will relocate the fuel farms; another year, 2 years after that, the hydrogen system will be installed on the south ramp, and the ___________________.

OM: I won't comment on those basis, because I don't think that's possible to tell you that accurately today.

: What would be the ______________, just curious.

OM: No, I just encourage you probably to keep on attending the informational meetings as new information comes forth.

: Thank you.

MH: Another question, please. Again, just a procedural one that you per chance rushed in here without getting validated, the gentleman there sitting in back at the table is your friendly signature with the stamp. Unless you walked here I suggest you get validated. The second item would be just a reminder again, our apologies for running out of the handouts, if you would indicate to staff again, I hope that all of you signed in and just to indicate to them where you're located on the sign up sheet and we'll get one mailed out to you. And the third item would be that that special tenant meeting that you'll be notified if you'd indicate to staff that you're one of those parties interested, also that would be helpful.

Again, let me ask, are there any other questions? Jerry, did you have a followup.

G: When you look at the phenomenal growth.....

List of Attendees

Public Informational Meeting
Honolulu International Airport
Master Plan 2010

November 27, 1990
7:00 p.m.
Garden Conference Room
Honolulu International Airport

Names	Organization	Phone
Lawrence Chun	Edward K. Noda & Assoc. Inc.	533-0553
Lavern Rollet	Daly Chang Architects	521-8889
Trudie China	Pacific Construction	521-7861
Dean S. Nakagawa	DOT-A	836-6526
Russell Kimura	Oahu Construction	836-2981
Frank DePonte	Oahu Construction	836-2981
Carol L. Hong	Hong Imai Hulbert & Kano	524-4900
Dick Melcher	Parsons Hawaii	523-5464
Ron Tank	DFS Hawaii	837-3414
Dwight Ho	Hawaiian Cement	545-1880
Burton Oshiro	Springs Inc.	833-9494
C. Anna Ulaszewski		521-3051
Lynette Char	Aviation Concepts Int'l.	373-1904
James G. Dittmar	Edward K. Noda & Assoc. Inc.	533-0553
Steven Fong	Cement & Concrete Prod. Ind.	833-1882
Jackson Stephens	Daly Chang Architects	521-1077
Mia Stephens	Belt Collins & Assoc.	521-5361
M. Zablan	Honolulu Fire Dept.	943-3838
Alan Johnson	Channel 2 News	526-4278
Marvin Buenconsejo	Channel 2 News	526-4278
P. J. Rowell	Barton-Aschman	523-5464
Don Maddison	KPMG Peat Marwick	531-7286
Eddie Murai	Clarklift Pacific	839-2708
Lorrin Ching	KJL Associates	524-0129
Peter Uehara	KJL Associtei	524-0129
Dennis Matsunaga	Parsons Hawaii	523-5464
Jim Mooney	Aviation Consultant	262-8623
Duncan Walker	Eng-Science	523-5464
Patricia Shimazu	Okita, Kunimitsu & Assoc.	944-6565
W. R. Buevens	Edward K. Noda & Assoc. Inc.	533-0553
Carmelo L. Monti	Sam Chang Architects	521-1077

List of Attendees

Public Informational Meeting
Honolulu International Airport
Master Plan 2010

November 27, 1990
7:00 p.m.
Garden Conference Room
Honolulu International Airport

Names	Organization	Phone
James Aea	Honolulu Fire Dept.	523-4060
Kalani Wilmington	Honolulu Fire Dept.	523-4334
George Krasnick	GK & Associates	528-5228
Dan Tanaka	DOT-STP	548-6526
Ed Akiona	Honolulu Fire Dept.	836-6624
John Yamamoto	DOT-A	836-6580
Dexter Kubota	KFC Airport, Inc.	836-7787
Alan Hirota	M&E Pacific	837-4466
Ken Van Belkum	ParEng	531-1676
Ed Brown	General Auto Parts	834-7140

Minutes of Meeting

Public Informational Meeting
Honolulu International Airport
Master Plan 2010 and
Environmental Impact Statement

November 27, 1990
7:00 p.m.
Garden Conference Room
Honolulu International Airport

Opening Statement, Ms. Jan Amii, Commissioner, Department of Transportation

Good evening ladies and gentlemen, it is now 7:10 pm and I would like to open this public information meeting here at the Honolulu International Airport Garden Conference Room this evening. My name is Jan Amii and I'm a commissioner with the Transportation Department. The purpose of this meeting is to afford all interested persons an opportunity to discuss matters with respect to the Honolulu International Airport 2010 plan and Environmental Impact Statement (EIS). The agenda for tonight will be as follows first Mr. Owen Miyamoto, the airport's administrator of the Department of Transportation will make a short presentation on the subject to be discussed tonight. He will than introduce the consultants working on this project. This will be followed by presentations on the Honolulu International Airport 2010 Plan and EIS. Thereafter, we will receive any questions, comments or suggestions you may have on this matter. The proceeding of this meeting will be recorded, therefore, we ask that you speak clearly in stating your questions or comments. In order that each and everyone of you may be given a fair opportunity to be heard we request that you observe the following procedures. If you wish to speak, please raise your hand and when recognized, state your name and the organization that you represent, if any, and then proceed with your question or comment. We will now get into the details of the project affecting your community. I would like to recognize Mr. Miyamoto to begin the presentation.

Introduction, Mr. Owen Miyamoto, Airports Administrator, Department of Transportation, Airport Division

Thank you very much Jan. Thank you very much folks for coming tonight to join us in presenting your comments on the proposed update of the Master Plan for Honolulu International Airport and that's the reason we are all here tonight. The Department of Transportation has been in the process of updating the Master Plan to reflect some of the changes that are occurring in the planning and the development of Honolulu International Airport. Some of you may recall that just a few years ago, less than five years ago, we completed an update of the Master Plan and was considered to be an acceptable one for at least twenty years. But the events quickly

told us that we were wrong that we needed some additional changes to the plan. One of the points that became clear, that the traffic for International passengers was growing far more rapidly than anticipated and that we had to reconsider the location of the International Arrivals Building. That project then grew into a much larger project because we ultimately decided on the location of the new International Terminal Building. It created a chain of events that resulted in the requirement to make some other drastic changes to the Master Plan for the airport. That's the reason why we are going so quickly into another revision of the Master Plan after having completed one just a short time ago. Our consultants tonight will describe the projects that are affecting the Master Plan and the proposal that we have for updating of that Master Plan. I would like to introduce right now, the consultants for our Master Plan, Edward K. Noda and Associates, Mr. Jim Dittmar who will be making the presentation.

Presentation of Projects, Mr. James Dittmar, Edward K. Noda & Associates

Did everyone get one of these handouts? I think we will be working from that, we have an overhead projector.

This basically is more or less an overall view of the airport and some of the larger projects which will be outside the North and South Ramp. One of the first things we will be looking at constructing a Hazardous Cargo Facility which will be down here not to far from the Fire Station over here. This is a taxiway which has never been completed and plan to go ahead in the next few years construct this down here. If we have any hazardous cargo coming in on aircraft it will be routed down here. We feel we can still maintain most of the airfield in an operational mode with that facility there.

Another change that will happen is right now we have approximately 386,000 barrels of jet fuel stored in this area. As part of this International building, we are playing more or less musical chairs, before we can build here we have to move something out. So the jet fuel storage will be moved out to this area down here along the Lagoon Drive subdivision, next to Keehi Lagoon. This is a matter of concern because we have to engineer it to make sure no fuel gets into the Lagoon.

The other area, we have a lot of General Aviation in this area up here that is being move out and down into the South Ramp. You can see in this picture, this is the existing Reef Runway Fire Station, the Fire pit. This will be the General Aviation tie-down here, this will be the General Aviation terminal. People coming, connecting on air taxi's who want to land in this area will embark/disembarking in this area. We also have a number of you see UPS is down there right now, a lot of air cargo, Continental is moving their facility down here, Marriott will be down here also, with their flight kitchen, and a lot of Fixed Base operators. It

may look very empty right now but its already filled up. We are running out of room at Honolulu International Airport this is something we will address a little bit later.

We are also looking to constructing service roads around which will connect around 4L here into the Reef Runway. Also, service roads around 8L up in here. This will allow ramp vehicles which now to travel within the airfield without getting on the public roads. Many of vehicles we have at Honolulu International cannot be licensed for public roads. This will allow travel within the airport and stay off the public roads.

A major controversial item is the acquisition of new property. The state has just recently completed buying this 22.8 acre section from Hickam Air Force Base for 26.9 million dollars. Its a little bit unusual in the purchase in that it actually involved escrow. The money from escrow will go toward Hickam Air Force housing. The state is also looking to acquire this Ualena Street Development here, between Paiea Street, Lagoon Drive, Ualena and Aolele Street. As part of this acquisition, Aolele Street will be closed in the future. Additionally, there is about 12 acres of land in Kapalama which will come back to the airport. It is anticipated that this land will be used for future airport fuel storage. Currently, the airport has about 11 acres out here on Sand Island that was land banked for fuel storage but, no longer be able to put fuel storage out here so it will be relocated here. Additionally, there will be another 5 acres which has not yet been defined for tenant relocation from this area to Kapalama for some of the industrial tenants out there.

We're going to also, look at constructing an interim engine runup pad for testing of aircraft. We do occasionally have a need for that right now, we basically testing here on the Reef Runway at nighttime. We hope that putting them over in this area here we provide some relief for the Hickam Housing at least from noise. These are Single Event Noise operations.

Also, looking at a new Microwave Landing System for takeoff over here, which will allow us at least during Kona winds to bring them in on an angle and land here on the airport.

Some of the North ramp improvements. This is where it gets very busy. As part of the Overseas construction continues to go on, Overseas terminal improvements were made. We are modifying the Central Concourse gates right now. This will allow us to have a little better flexibility in International arrivals during peak hour. A major project that just went out to bid is the new Interisland terminal right here. This is a little hard to visualize, but this is the second level roadway which leads to the Main terminal. This is a continuation of this. This is a combination terminal and parking structure. There will be a frontage road in front it which will allow a bypass and go into the Overseas terminal and also entry way into here. This is under construction right now. The existing Hawaiian Airline terminal

will be connected with this project.

Also, the North Ramp commuter facility will be going, once the new Interisland Facility is done. The commuter facility right now will be mauka or north of the existing Hawaiian Airlines terminal. Part of the parking lot will then be converted to a ramp area for the, basically be for Aloha Island Air and Hawaiian Airlines or any other air taxi which wishes to be on the North Ramp. As I said previously there will be a terminal on the South Ramp for any other air taxi service which wants to operate out of there.

So the main construction project which will be going on in the next few years is the International Terminal Building. This is a major project and probably will not see anything like it in twenty years. This project has caused the relocation of all the Diamondhead tenants, including Northwest Airlines, United Airlines, Continental Airlines, the flight kitchens and the Fuel Farm. Basically, what's happened is the explosion of the International arrivals has been tremendous. We're planning now for a very large facility. We have the consultants here tonight who are doing the building so if you have any questions they will be happy to answer in more details. Connected with this will also be the extension of the Diamondhead Concourse ultimately to a matter of another 7 gates. Also looking at an Automated People Mover within the airport system. This will be along the frontal gates right here going toward the Diamond head Concourse. This is were you are right now, this is the Automated People Mover above here, and the walkway through the Japanese Garden.

Another project which will take place along Ualena Street would be Cargo City. This is essentially a five story building along Ualena Street. Will occupy initially about where Zeigler Steel is and work down toward the Airport Center building, which is the large white building. This would be standing on Ualena Street and looking at the building, right now. The first floor would be for air cargo and the second floor is for industrial tenants. Third, fourth or fifth floor would be used for parking, other tenants and looking also at moving some of the DOT operations on to the fifth story. This is the architect's rendering of what the fifth floor would look like. This again is a major project of the airport.

We are also looking the Passenger Moving System, is including a base maintenance yard for the Passenger Moving System on Ualena Street.

The Base Maintenance Facility which is now below Aolele Street, on the makai side, will also be expanded for interim time until we find a final location for that, which has not been determined yet.

We also be relocating the Air Rescue and Fire Fighting Station from the Diamond Head side of the airport to the Ewa Side, quite close to the Manuwai Canal.

Also, concern of putting the Airport Hotel and Overseas Parking

structure within the existing parking lot.

The roadway improvements will be a massive undertaking here at the airport. Of major importance will be the closing of Aolele Street between probably the Diamondhead Concourse and Lagoon Drive. This will allow us to expand the ramp space which is now below Aolele Street directly to the Ualena property to be acquired. This makes it a prime property for the airport.

Additionally, some of the areas which are now under the flight paths, which have restrictions on building heights will be continued to be used for employee parking. Its a continuing problem at the airport.

We're also looking to plan a link to the Honolulu Rapid Transit System. Originally, it was thought the system would be a spur link into the Interisland Terminal into the Main Terminal. Until they firm up their plans we will not be able to define that.

We also have some very mundane problems here at the airport as with any big facility does. We are looking in constructing a central chiller plant for air conditioning to get more energy efficiency. We also have the only utility we probably have enough of right now is water. We are also planning in bringing potable (non potable?) water to the South Ramp so we can reduce the amount of water need for irrigation. Also, the state will have to work with the City and County on a sewer system. The sewer line outside the airport will probably be overload within the next few years. These are all very mundane things, but they have to be done to make the airport work.

On the nice side, we're looking at also some theme parks. Right outside the International building, the lei stands would be relocated there. I don't know if you folks are familiar with the old Interisland place, but we always say people out there on the lawn sunbathing and everything. Hopefully, that will be duplicated again out there so people can enjoy a little bit of sunshine at the airport.

We are looking also, again for substations at the airport Rodgers Boulevard and also down at the Lagoon Drive Subdivision.

One last thing we are doing at the airport, is during the years there has been a number of hydrocarbons spilled out here at the airport and accumulated in the subsoil right now. Both the Interisland project, International project and the Overseas Terminal have currently have projects under way to identify the extent of this hydrocarbon and come up with a remediation plan to take care of them.

Discussion

That pretty well covers it. Owen you want to take questions? Anyone have any questions?

Question: Trudie China, Pacific Construction, International Terminal, what is your time table on that construction?

Answer: Owen Miyamoto, Our plan is to start construction the early part next year and hopefully, complete everything by 1994, or at least be able to open the International Arrival Function by 1994. There will be some construction after that time. We are looking at a very ambitious time schedule and requires coordination of not only the building but the ride system. 94 is when we will start using the building for the inspection function at least the ground floor should be ready.

Question: Marvin Buenconsejo, Channel 2 News, Just quickly, could you go over in a little more detail on what happened on the International Complex and why the revision?

Answer: Owen Miyamoto, All of you are probably familiar with the present International Arrivals Facility, which is a two-level structure which was designed and built about 20 years ago now. That particular building is trying, and has an actual capacity of about 2000 passengers an hour and we have far more than that coming through during peak periods. The problem that we have there is that physically there is just not enough room to provide as much inspection space as necessary for the number of inspectors for the volume of passengers we have. It is just physically impossible to pass that many people through there. As a result we have people waiting there for up to two hours or sometimes even longer to complete their inspection process. I think there was an article just over this weekend where the Japanese tour agencies have said that one of the biggest complaint that they have from their customers is the fact that they have such poor service at the International Arrivals Building. We knew that this was a problem so we got this effort of identifying how we could solve the problem. One of the obvious alternatives was to enlarge the building where it is. There is problems with that because you have to work with an existing building that's in operation. So we cast that aside and looked at other locations and ultimately ended up where we have now a location on the Diamondhead side of the building as Jim pointed out. That's the process we went through. Our consultants have identified the size of the area we need. We need roughly about three times the space we presently have for inspection services. The building itself is going to cost us in the neighborhood of 5 or 6 hundred million dollars if you add all of the items together that are involved in that project. We are trying to bring the cost down to something we can afford to handle that would still do the job that is necessary. This is the stage that we are at now. We completed the 30 percent design

of the building itself and we should be able tell the consultants to proceed with the final design package so we can go out with the initial work which will involve drain lines, excavation and site development.

Closing Remarks, Mr. Owen Miyamoto

Any other questions? Jim went through this pretty fast but I think that the diagrams themselves are pretty self explanatory. We want to emphasize the involvement of the public in this project is important to us, because their going to be ones that are affected and certainly their going to be the ones that we hope will benefit by the improvements at the airport. We will continue to have meetings like this. We will stay here till everybody is gone. If you want come up and take a closer look at the drawing or ask any of the people that are here, we have not only the consultants that are doing the design work, but also those that did the planning work as well as people on our staff. For those you that want to ask further questions or have something in mind later on, we certainly encourage you to write to us. Write to me care of the Department of Transportation, at the airport here. All you have to do is mention the Department of Transportation, our zip code is 96819, and will get to us. We would welcome any suggestions you might have to improve this plan.

Closing Statement, Ms. Jan Amii

We thank you all for taking the time for being here at this public information meeting. And as Mr. Miyamoto pointed out you may write to him and I would also point out that his address is on the second page of the agenda tonight. It is now 7:30 and I declare this public information meeting concluded.

DEIS COMMENT LETTERS AND RESPONSES

COMMENTS REQUIRING RESPONSES

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

COPY

November 23, 1990

RECEIVED
NOV 28 1990
EDWARD K. NODA & ASSOCIATES

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement (DEIS) for Honolulu International Airport Master Plan 2010

We have the following comments on the proposed project:

1. The EIS should discuss the process by which the State proposes to obtain the water required to meet projected demands such as participation with the Board of Water Supply (BWS) in the development of new sources, etc.

2. The EIS prematurely infers that the Kalauao Springs can provide additional non-potable water for irrigation purposes. The Department of Transportation will be required to negotiate with the BWS for any increased allotment of non-potable water from Kalauao Springs for irrigation purposes. The present allotment of 1.71 million gallons per day (GPD) of non-potable water is based on existing irrigation requirements. This project will impose additional demands which exceed the present allotment.

3. The area and additional water demands for the theme park landscaping should be described.

RD OF WATER SUPPLY
Y AND COUNTY OF HONOLULU

COPY

4. The availability of potable water and the applicability of Water System Facilities Charges will be determined when building permit applications are submitted for our review and approval.

If you have any questions, please contact Bert Kuioka at 527-5235.

Very truly yours,

Kazu Hayashida

KAZU HAYASHIDA
Manager and Chief Engineer

cc: Department of Transportation, Attn: Walter Nishigata
Edward K. Noda and Associates

EKNA

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

IN REPLY REFER TO

AIR-EN
90.299

December 26, 1990

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Subject: Honolulu International Airport Master Plan 2010
Draft Environmental Impact Statement

Thank you for your comments regarding the Honolulu International Airport (HIA) Master Plan 2010, Draft Environmental Impact Statement (DEIS).

1. The DEIS states in Appendix B that the current potable water supply to HIA will be adequate to meet the forecasted demands, if a non-potable water supply is developed to meet the irrigation demands. Therefore, a discussion regarding the participation with the BWS on the development of new potable water sources may be premature at this time.

2. The DEIS did not intend to infer that the Kalauao Springs would provide the additional capacity needed by HIA beyond the present contracted amount. However, the maximum capacity of the spring is approximately 5 million gallons per day (MGD) which our consultants obtained from your staff. Therefore, the figure included in the DEIS was to illustrate the non-potable water distribution system at the airport, thus using Kalauao Springs as the source of water. At present, this spring is the only source of water and is depicted as such. However, at a time when the non-potable demand exceeds our present allotment, we will renegotiate with you and your staff to develop a new agreement.

3. The theme park will use approximately 16,880 gallons of non-potable water per week. This amount is expected to have a minimal impact on the water demands at the airport and could be met as part of our present non-potable water agreement with BWS. We will for clarity, enter this water usage into the Final EIS. *(Page II-26)*

4. We will comply with the BWS's determination.

We are also concerned with the water supply for the island of Oahu and if you or your staff desires a meeting with us, please contact either myself or Mr. Walter Nishigata. We would appreciate your comments and recommendations regarding water conservation or other water related issues.

If you have any questions, please contact Mr. Walter Nishigata of my staff at 836-6407.

Very truly yours

Owen Miyamoto

Owen Miyamoto
Airports Administrator

bcc: Edward K. Noda & Associates

4011

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA STREET

HONOLULU, HAWAII 96843

January 17, 1991

Mr. Owen Miyamoto
Airports Division
Department of Transportation
State of Hawaii
Honolulu International Airport
Honolulu, Hawaii 96819

Dear Mr. Miyamoto:

Subject: Your Letter of December 26, 1990 Regarding the Draft Environmental Impact Statement (DEIS) for the Honolulu International Airport Master Plan 2010

Thank you for your timely response to our concerns on the DEIS for the Honolulu International Airport Master Plan 2010.

We are in the process of developing a comprehensive water conservation program and will be glad to assist you with any specific questions that you may have.

We will be contacting you or Mr. Nishigata if a meeting is required on any water concerns that may affect or involve your project.

If you have any questions, please contact Bert Kuioka at 527-5235.

Very truly yours,

Kazu Hayashida

KAZU HAYASHIDA
Manager and Chief Engineer

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

BENJAMIN B. LEE
CHIEF PLANNING OFFICER

ROLAND D. LIBBY, JR.
DEPUTY CHIEF PLANNING OFFICER

RK 10/90-2847

November 21, 1990

RECEIVED
NOV 29 1990
EDWARD K. NODA & ASSOCIATES

Honorable Bruce Anderson, Acting Director
Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Dr. Anderson:

Draft Environmental Impact Statement
for the Honolulu International Airport
Improvement Projects: 1990-2010

We have received the Draft Environmental Impact Statement (EIS) for the proposed Honolulu International Airport Improvements and offer the following comments to assist in the preparation of the Final EIS.

1. The Honolulu International Airport appears on the Primary Urban Center Development Plan Land Use Map as a public facility. With one exception, the proposed projects described in the subject EIS conform to the Honolulu International Airport's Public Facility designation. The expansion of the airport's north-east boundary into the 24-acre Ualena Street parcel bordering Honolulu International Airport, however, will require a Land Use Map amendment to reflect the change from Industrial to Public Facility use.

   Recent changes in the interpretation of Development Plan Common Provisions regarding cost criteria for map amendments voids prior provisions which previously exempted joint-use airports from public facilities map amendment requirements. Airport improvement projects resulting in expanded capacity, change in function, significant impacts, improvements which would permit significant new or redevelopment, or exceed $1 million cost will require Primary Urban Center Development Plan Public Facilities Map amendments.

2. Planned terminal and concourse expansion will necessitate an improved internal transit system. An Automated People Mover system promises greatly improved service over the existing "Wiki-wiki" bus service.

   The Final EIS should discuss criteria for the selection of the Automated People Mover technology.

   We have the following additional concerns:

   a. Since noise-factors vary by technology, ranging from magnetic levitation and rubber tires (quietest) to steel wheels (noisiest), noise impacts should be discussed in the Final EIS.

   b. The Final EIS should describe proposed security measures to ensure the security and safety of riders on the unattended trains.

   c. How will the Automated People Mover System interface with the City's proposed Rapid Transit System?

3. We are confident that the relocation of the Satellite Fuel Farm will be in full compliance with governing safety regulations.

   However, we have additional concerns about the proposed location. The recent fire at the Sand Island fuel depot underscores the prudence of locating such facilities away from residential and high-traffic areas.

   The proposed relocation site, while remote from residential and business centers, is in close proximity to Keehi Lagoon Recreational Boating facilities.

   The proposed Hawaiian Canoe Center and adjacent Keehi Lagoon Park are expected to become the hub of Oahu canoe-racing activities. This area will support regular training activities and attract sizeable crowds to canoe-racing regattas.

   Although the proposed Pier 60 and Lagoon Drive Marinas will not permit live-aboards, the expanded Keehi Special Anchorage, which is due east of the proposed depot site, will continue to support an estimated resident population of 275 - 300 live-aboards.

Given the site's proximity to Keehi Lagoon Recreational Facilities, and the possibility of accidental fuel discharge into the lagoon, we have the following concerns:

a. What would be the impact-zone in a catastrophic explosion/fire? Are evacuation plans included in mitigation plans? The only resident population in proximity to the proposed depot would be the live-aboards moored at the Keehi Special Anchorage. The channel along Lagoon Drive would appear to provide an adequate buffer-zone in the event of an accident, but the Final EIS should discuss any possible risks to these residents in the event of a fuel depot fire or explosion.

b. Any fuel odors attendant with normal operations should not interfere with recreational activities or pose health risks to park users.

c. Will water quality be monitored on a regular basis to assess the effectiveness of mitigative measures?

d. Will landscaping or other measures be employed to reduce the visual prominance of the proposed fuel-containment berms?

The Final EIS should discuss these potential impacts and possible mitigation

4. The Final EIS should discuss any health risks associated with transient or long-term exposure to microwave fields such as will be created by the microwave landing system proposed for Honolulu International Airport. If mitigation is necessary, what form would it take?

Should you have any questions, please call Ronald Kodama at 527-6070.

Sincerely,

BENJAMIN B. LEE
Chief Planning Officer

BBL:js

cc: Department of Transportation
√Edward K. Noda and Associates

EKNA

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

IN REPLY REFER TO:

AIR-EN
91.31

JAN 31 1991

Mr. Benjamin B. Lee
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments on the subject report. We provide the following response.

1. We appreciate your comments on the existing Land Use Policies of the Development Plan Common Provisions. My planning staff will review the matter and take the appropriate actions. *(Page V-21)*

2. The selection criteria for the Automated People Mover (APM) will be referenced in the Final EIS. However, due to its length, it will not be incorporated in the Final EIS. A copy of the document may be reviewed by contacting Mr. James Chang of my staff at 836-6591.

    a. The noise impacts of the APM were studied by Y. Ebisu & Associates and the conclusions of the study indicate no significant increase in noise over the present Wiki-wiki system. Also, the overall noise will be within the range of existing airport noise conditions. A reference to this report will be included in the Final EIS. *(Page IV-45)*

    b. The APM will meet all applicable Federal, State and local safety principles, rules, laws, codes, orders and regulations before passenger operation. A brief discussion of the safety and security of riders on the unattended trains will be included in the Final EIS. *(Pages II-14 to II-17)*

Mr. Benjamin B. Lee
Page 2

AIR-EN 91.31

c. We are working with the C & C of Honolulu Rapid Transit Development Division to provide a linkage between the two systems.

3. We understand your concern regarding the new location of the satellite Fuel Farm. However, based on the need of a fuel facility within the airport boundary and following the studies for various alternate sites, we feel this is the best available site. Any other site would have been closer to congested areas, directly beneath flight paths, and/or too costly to develop. All of these items were considered in the selection of the new fueling facility. All possible mitigation measures to prevent a fuel spill into Keehi Lagoon will be utilized.

   a. The Final EIS will discuss the potential risks associated with the fuel storage facility (i.e. explosion, fuel spill, fire). The Final EIS will also include a mitigation measure which will mandate a preparation of an impact/blast zone and the appropriate evacuation plans for areas within the zone during the design process. Additionally, it will mandate a similar plan for the response to a fuel spill. All such plans will follow applicable Federal, State and local rules, laws, regulations and codes. *(Pages IV-17 to IV-20 and IV-68 to IV-69)*

   b. There should be no vapor released from the Satellite Fuel Facility, since it requires temperatures in excess of 100° F. to produce vapor. All fuel will be stored in ambient conditions which will average approximately 80° F.

   c. We will be continuously monitoring ground water and Keehi Lagoon on a regular basis to ensure the mitigation measures are functioning properly. *(Pages IV-17 to IV-20)*

   d. The DOTA will landscape the berm to mitigate its visual impact. *(Page IV-12)*

4. The Microwave Landing System will be installed in accordance with FAA criteria. These systems are already in use in other parts of the country and we will be monitoring these applications to insure that our system will not pose any health risks. *(Page II-18)*

JAN 31 1991

If you have any question, please contact Mr. Walter Nishigata of my staff at 836-6407.

Very truly yours,

Owen Miyamoto
Airports Administrator

bc: EKNA

DEPARTMENT OF PUBLIC WORKS

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

In reply refer to:
ENV 90-259(449)

November 2, 1990

The Honorable John Waihee, Governor
State of Hawaii
c/o The Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement (DEIS)
Honolulu International Airport Master Plan 2010
TMK: 1-1-01 to 04, 14 to 16 and 70

We have reviewed the subject DEIS and have the following comments:

1. We have no objections to the Honolulu International Airport Master Plan 2010.

2. The feasibility analysis to evaluate options for handling the sewage requirements for both the Keehi Lagoon development and the expansion of the Honolulu International Airport should be submitted to our Division of Wastewater Management for review.

Very truly yours,

Sam Callejo

SAM CALLEJO
Director and Chief Engineer

cc: DTS
Edward K. Noda & Associates

RECEIVED
NOV - 8 1990
EDWARD K. NODA & ASSOCIATES

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

IN REPLY REFER TO:

AIR-EN
91.28

January 25, 1991

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments on the subject report. The Department of Transportation will continue to work with your office to evaluate options regarding the Wastewater System in the vicinity of the airport.

If you have any question, please contact Mr. Walter Nishigata of my staff at 836-6407.

Very truly yours,

Owen Miyamoto
Airports Administrator

bc: EKNA

DEPARTMENT OF TRANSPORTATION SERVICES

CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

JOSEPH M. MAGALDI, JR.
DIRECTOR

TE-5952
PL90.1.344

December 10, 1990

RECEIVED
DEC 12 1990
EDWARD K. NO... & ASSOCIAT...

The Honorable John Waihee
Governor, State of Hawaii
c/o The Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Honolulu International Airport Master Plan 2010
Draft Environmental Impact Statement
TMK: 1-1-01; 02; 03; 04; 14-16; 70

This is in response to a letter which was received by our office on October 22, 1990 requesting our review and comments on the subject project.

Our concerns are as follows:

1. Ownership of roadways within the project scope should be specified.

2. The neighborhood board should be informed of the parking restriction on both sides of Koapaka Street between Paiea Street and the nearest proposed driveway of the Airport Trade Center project.

3. Restriping plans along Ualena Street should be coordinated with our department.

4. Signalization at the Ualena Street/Paiea Street, Koapaka Street/Paiea Street, and Aolele Street/Paiea Street intersections should be coordinated with our department.

5. Construction plans, including a traffic control plan showing temporary detours, should be reviewed by our department.

6. A locally preferred alternative (LPA) for the rapid transit alignment has been identified and selected. The LPA will run along Kamehameha Highway and includes a station near Aolele Street which seems to be in the vicinity of the proposed North Ramp Commuter Facility shown in this DEIS. Our Rapid Transit Development Division has initiated discussions with the Airports Division to ensure that continued coordination is maintained to provide linkage between the Passenger Ride-Automated People Mover System and the Aolele Street rapid transit station.

If you have any questions, please contact Mel Hirayama of my staff at 523-4119.

Sincerely,

JOSEPH M. MAGALDI, JR.
Director

cc: State Dept. of Transportation
Edward K. Noda and Associates
The Office of Environmental Quality Control

EKNA

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

IN REPLY REFER TO:

AIR-EN
91.26

JAN 3 1 19[illegible]

Mr. Joseph M. Magaldi, Jr.
Director
Department of Transportation Services
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Magaldi:

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments regarding the subject report. We provide the following response.

1. The ownership of the roadways will be clarified in the Final EIS. *(Page IV-35)*

2. This change was previously presented in the Airport Trade Center Traffic Impact Assessment Report (Pacific, Planning and Engineering, Inc. July, 1989), and is included in this report as the base future network within the airport vicinity. The traffic section will be modified to clarify these points. Also, representatives from neighborhood boards within the Airport environs do provide input as members of our Technical Advisory Committee. *(Page IV-36)*

3-5. We will coordinate the proposed roadway projects with your Department and with the State of Hawaii, DOT, Highways Division.

6. I am aware of your preferred alternative, and as you have pointed out, our consultants are working with your group to effectively resolve the link between the C&C proposed transit system and our passenger mover system.

If you have any question, please contact Mr. Walter Nishigata of my staff at 836-6407.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

bc: EKNA

RECEIVED
DEC 10 1990
EDWARD K. NODA & ASSOCIATES

PB 90-1080

November 30, 1990

Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 S. King Street, Room 104
Honolulu, Hawaii 96813

Dear Sir:

Subject: DEIS Honolulu International Airport Master Plan 2010

Upon reviewing the subject DEIS, we have noticed that the City and County of Honolulu's combined fire/police helicopter facility had been deleted. Considerations for a combined fire/police helicopter facility had been indicated in previous Honolulu Airport master plans.

We would like to request that this facility be reintroduced into the State's Master Plan for the Airport.

Thank you for the opportunity to offer our comments.

Very truly yours,

Herbert K. Muraoka

HERBERT K. MURAOKA
Director and Building Superintendent

DC:jo
cc: J. Harada
State Dept. of Transportation
(Walter Nishigata)
Edward K. Noda and Associates

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

IN REPLY REFER TO:

AIR-EN
91.29

January 25, 1991

Mr. Herbert K. Muraoka
Director and Building Superintendent
City and County of Honolulu
Building Department
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Muraoka:

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments regarding the subject report. The removal of the combined fire/police helicopter facility from the recently acquired Kapalama Military Reservation and from our current planning process was necessitated due to the lack of sufficient land to accommodate this type of facility. We will continue to study alternatives, however, until an adequate site is found which is conducive to helicopter operations, the existing facility may have to suffice.

If you have any question, please contact Mr. Walter Nishigata of my staff at 836-6407.

Very truly yours

Owen Miyamoto

Owen Miyamoto
Airports Administrator

bc: EKNA

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96814 - AREA CODE (808) 943-3111

FRANK F. FASI
MAYOR

MICHAEL S. NAKAMURA
CHIEF

HAROLD M. KAWASAKI
DEPUTY CHIEF

OUR REFERENCE ES-LK

November 2, 1990

Dr. Bruce Anderson
Acting Director
Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Dr. Anderson:

This is in response to your request for comments on the draft environmental impact statement for the Honolulu International Airport Master Plan 2010.

As with other major projects, our principal concerns are crime prevention, public safety, and traffic flow. We assume that the first two will be taken care of by appropriate security measures in the design and operation of the facility and by safeguards during construction. The planned roadway and parking changes in the airport area should help to reduce traffic problems. However, given the congestion that is likely to occur even with these changes, we can only urge that as much attention as possible be given to plans for easing traffic flow in the area.

Thank you for the opportunity to comment.

Sincerely,

MICHAEL S. NAKAMURA
Chief of Police

By Chester E. Hughes
CHESTER E. HUGHES
Assistant Chief of Police
Support Services Bureau

cc: Department of Transportation
Edward K. Noda and Associates

RECEIVED
NOV - 6 1990
EDWARD K. NODA & ASSOCIATES

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

AIR-EN
91.27

January 25, 1991

The Honorable Michael S. Nakamura
Chief of Police
Police Department
City and County of Honolulu
1455 South Beretania Street
Honolulu, Hawaii 96814

Dear Chief Nakamura:

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments on the subject report. We concur with your comments and are studying alternatives which we hope will relieve some of the traffic problems in this area.

If you have any question, please contact Mr. Walter Nishigata of my staff at 836-6407.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

bc: EKNA

U.S. Department
of Transportation
**Federal Aviation
Administration**

AIRPORTS DISTRICT OFFICE
BOX 50244
HONOLULU, HI 96850-0001
Telephone: (808) 541-1243

December 11, 1990

RECEIVED
DEC 13 1990
EDWARD K. N... ASSOCIAT..

Mr. Owen Miyamoto
Airports Administrator
Airports Division
State of Hawaii, DOT
Honolulu International Airport
Honolulu, Hawaii 96819

Dear Mr. Miyamoto:

We have reviewed the Draft Environmental Impact Statement (EIS) dated October 1990 for Honolulu International Airport. Our review, based upon FAA Order 5050.4A, Airport Environmental Handbook, has found the following:

1. Several specific impact categories were not addressed in this Draft EIS: Land Use, Social Impacts, DOT Section 4(f), Endangered Species, Wetlands, Floodplains Coastal Barriers, Wild and Scenic Rivers, Light Emissions, and Construction. Please add these categories to the EIS.

2. We question why the five projects listed on page I-6 are being done as separate EA'S. Why not combine them all into this EIS to avoid the potential issue of fragmentation?

3. It is unclear whether the Run up Facility on page I-8 is an enclosed hush house for aircraft up to B-747 and C-5A or an open air facility. Also noted on page II-12.

4. Under Proposed Governmental Action on page I-12, FAA approval of the Airport Layout Plan will also be required.

5. The Major Impact on traffic (page I-16) of closing Aolele Street as well as Mitigation Measures (page I-17) must be addressed.

6. Is the List of Preparers on page I-22 still current, specifically the listing for Chapman Consulting Services?

7. Cargo City and the Theme Park are not shown on Figure II-3 (page II-5).

8. Shouldn't the time period of the fuel facilities (page II-9) be 1990 - 1995?

9. The land acquisition on Ualena Street (page III-7) is also required for the Cargo City facility.

10. The proposed transportation projects listed on page IV-31 bring up the following:

    a. Will restriping Nimitz Highway westbound for a second turn lane interfere with through traffic?

    b. Has consideration been given to 4-way stops on Paiea at Ualena and Koapaka in lieu of signals on the three intersections on Paiea to reduce energy and maintenance costs?

    c. Which direction of Ualena Street would be restriped to provide two outbound lanes?

    d. At Paiea and Aolele streets, which street would be restriped to provide new lanes, and how would a connection be made to Ualena Street?

11. Why are only two mitigation measures to the closing of Aolele Street under consideration on page IV-34? What about the noted connection of Ohohia to Aolele or other proposed plans? All alternatives should be included for consideration.

12. Are the air quality analyses on page IV-35 still current? The latest was dated 1987. Forecasts, aircraft, etc., have changed since that time.

13. The nighttime noise increase at Ualena Street due to the increased cargo activity should be addressed on page IV-41 versus the existing daytime noise of the businesses to be relocated.

14. The notation on page IV-53 states that "the average monthly and daily consumption of electrical power in 1988 was less than 1987". Are there any figures for 1989?

15. The Kaiser-Permanente Moanalua Medical Center should be added to the Health Care Facilities on page IV-58.

We appreciate the opportunity to review this Draft EIS. If you have any questions regarding our comments, please call us.

Sincerely,

David J. Welhouse

David J. Welhouse
Airport Engineer/Planner

Henry A. Sumida
Airports District Office Manager

EKNA

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

IN REPLY REFER TO:

AIR-EN
91.32

JAN 31 1991

Mr. David Welhouse
Airport Engineer/Planner
Federal Aviation Administration
Airports District Office
Box 50244
Honolulu, Hawaii 96850-0001

Dear Mr. Welhouse:

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments on the subject report. We provide the following response.

1. We will include these items in the Final EIS. *(Pages I-23 to I-27)*

2. The reason for the five separate Environmental documents is explained on page I-1 of the DEIS. However, recent events have eliminated the need for all but one of the South Ramp Environmental documents. The South Ramp Environmental Assessment for the South Ramp Wash Pad will be written when more information becomes available on the project. This project is not expected to have any significant impacts, individually or cumulatively, on the environment. *(Page I-1)*

3. The Runup Facility description will be clarified in the Final EIS. *(Page I-8 and II-18)*

4. We will include the Airport Layout Plan (ALP) submittal in this section. At the end of the Master Planning process, we will submit an ALP for approval. *(Page I-12)*

5. The impact and mitigation of the closure of Aolele Street and the overall increase of traffic within the airport vicinity are addressed in Section 6.1 of the DEIS. We will review this section and clarify as necessary. Also, we are continuing to
(Page IV-38 to IV-41)

study the traffic impacts and will adopt measures to mitigate the impacts on the roadway system.

6. At the time the DEIS was being written, the list of preparers was current. However, we will be updating it in the Final EIS. *(Page I-27)*

7. We will update the figure in the Final EIS. *(Pages II-6 to II-7)*

8. The fuel facility is presently planned to be constructed beyond 1997.

9. We will include Cargo City in the discussion of land acquisition. *(Page II-19)*

10. Regarding the list of projects on page IV-31:

    The listed projects are proposed by private developers of properties along Paiea Street to improve access to their properties and to mitigate the traffic impacts of their respective development projects. The projects are listed to inform the reader of those roadway modifications already planned for the area which are assumed to be in place for the purpose of the Airport traffic impact analysis. *(Page IV-36)*

    a. No. The second left turn lane would require elimination of the acceleration lane for right turns made from Camp Catlin Road and require relocation of the "The Bus" stop pullout bay.

    b. The proposed private developments are expected to substantially increase peak hour traffic volumes on Paiea Street to levels which cannot be effectively served by four-way stop sign controls.

    c. Both the Ewa and Kokohead directions of Ualena Street at Paiea Street should be striped to provide two approach lanes (one left-turn and one through/right-turn lane) and one departure lane.

    d. The intersection modification should have been described as "restripe the Diamond Head (eastbound) approach of Aolele Street to provide a second left-turn lane onto northbound Paiea Street, and restripe Paiea Street to provide a second southbound approach lane to Aolele Street."

AIR-EN 91.32

JAN 3 1 1991

11. We are continuing to assess potential mitigation measures to Aolele Street. A Traffic Impact Analysis Report will be forwarded to DOT-Highway Division regarding the mitigation of the traffic impacts.

12. The list of studies you are referring to are earlier air quality analysis prepared for HIA. The present air quality analysis, prepared specifically for the EIS, is included as an Appendix to the DEIS. *(Appendix A)*

13. The area in question is an industrial area and the noise increase, if any, will not have a significant impact in this area. The planned use is also compatible with the City and County Zoning. A brief discussion will be included in the Final EIS. *(Page IV-48)*

14. No, the figures are correct as printed.

15. The Kaiser-Permanente Medical Center will be added to the Health Care Facilities on page IV-58. *(Page IV-69)*

If you have any question, please contact Mr. Walter Nishigata of my staff at 836-6407.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

bc: EKNA

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

ENV 2-1
EIS
JA/G

William A. Bonnet
Manager
Environmental Department

December 13, 1990

RECEIVED
DEC 17 1990
EDWARD K. NODA & ASSOCIATES

Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 South King Street, Rm 104
Honolulu, Hawaii 96813

Dear Sir:

Subject: Draft Environmental Impact Statement (EIS)
Honolulu International Airport Master Plan 2010

We have reviewed the subject EIS and have the following comments:

1. Descriptions pertaining to the existing feeds to the Airport, and regarding the need for the Airport and Lagoon Substation, are according to the information we previously provided the State. However, the Electrical System shown in Figure 7, strays from the proposed HIA duct system we have previously received from M&E Pacific (see copy attached).

2. Pages I-10 and II-14: CONSTRUCT NEW ELECTRICAL POWER SUBSTATION AND DISTRIBUTION SYSTEM.

   Revise second paragraph, third sentence to read, "Construction will entail the installation of a new HECO 138kV switching station in the vicinity between Kamehameha Highway and the Navy-Marine Golf Course, and a new HECO 138kV Substation at Rogers Boulevard with a 138kV underground transmission line connecting the two stations. A new HECO distribution substation will also be installed on Lagoon Drive in the Kalewa Street industrial area and a distribution system designed to support....etc."

3. Page 5 of the Utility Evaluation.

   Revise last paragraph, first sentence to read, "Electricity: To meet increase power demand to serve the HIA expansion in progress, HECO is planning to install a

new 138kV switching station in the vicinity between Kamehameha Highway and the Navy-Marine Golf Course and a new 138kV substation at Rogers Boulevard with a 138kV underground transmission line connecting the two stations. The new 138kV substation at Rogers Boulevard will service....etc."

4. Page 30 of the Utility Evaluation:

   Add a new sentence on second paragraph after the third sentence to read, "A new HECO 138kV substation at Rogers Boulevard will be fed by a new HECO 138kV switching station that will be constructed in the vicinity between Kamehameha Highway and the Navy-Marine Golf course. A new HECO distribution substation will be....etc."

Sincerely,

Attachments (2)

cc: Department of Transportation (w/attachments)
    Attention: Walter Nishigata

    Edward K. Noda & Associates (w/attachments)
    Attention: James G. Dittmar

PROPOSED HIA DUCT SYSTEM

TOTAL DUCT QUANTITIES AND SIZES

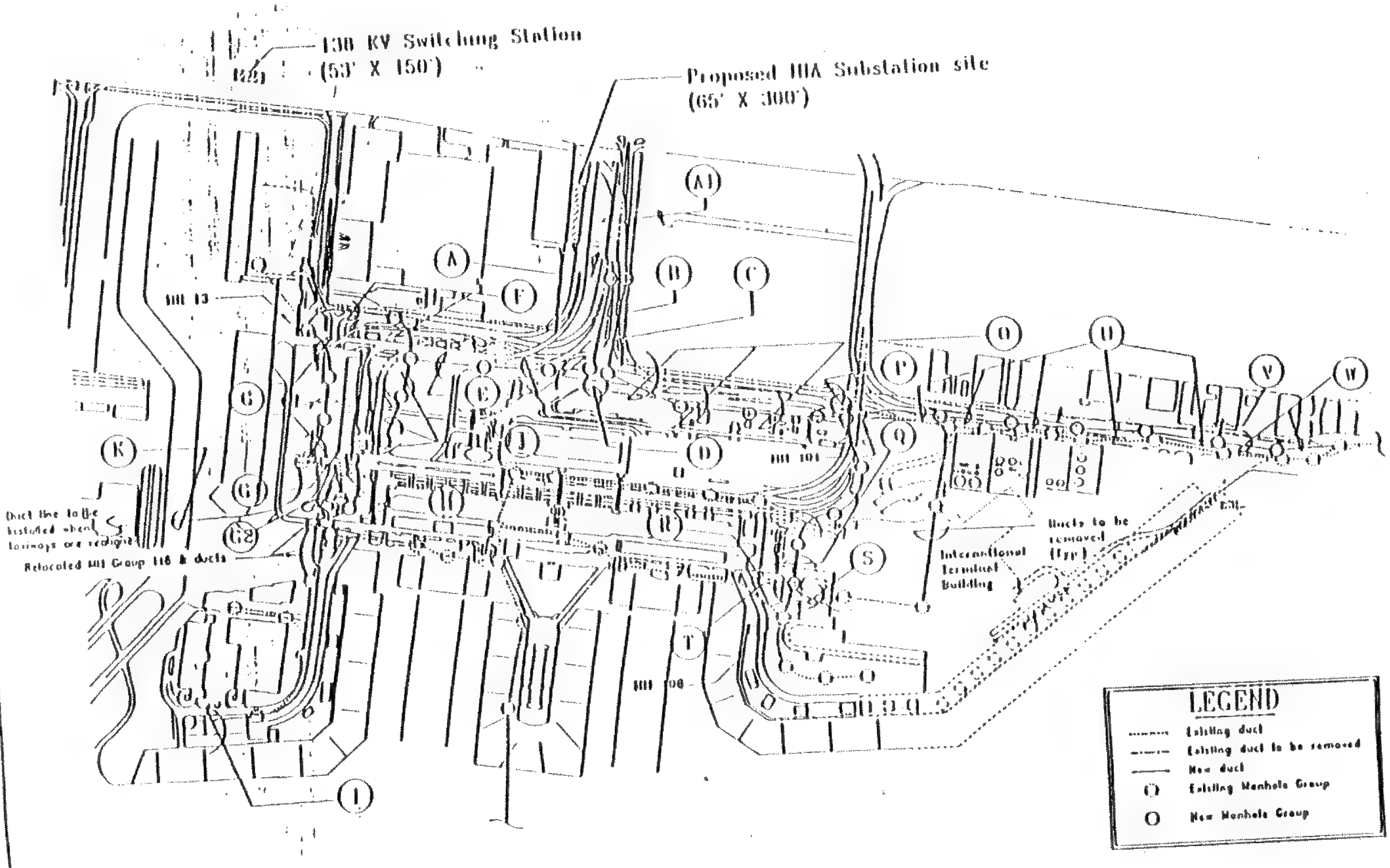
DUCT SECTION	115 KV HECO	REV. DATE	EPS*	REV. DATE	HTEL	REV. DATE	HIA COMM.	REV. DATE	PROJECT	SEE NOTES
A	28 - 5"	Jun-29-90					2 - 4"	Jun-19-90	EDSM	1
A1					2 - 4"	Jun-19-90			EDSM	2
B	12 - 5"	Jun-29-90			4 - 4"	Jun-4-90	2 - 4"	Jun-4-90	EDSM	3
C	16 - 5"	Jun-29-90			2 - 4"	Jun-19-90			EDSM	4
D	8 - 5"	Jun-29-90			6 - 4"	Jun-4-90	2 - 4"	Jun-4-90	EDSM	
E	16 - 5"	Jun-4-90			6 - 4"	Jun-4-90	2 - 4"	Jun-4-90	EDSM	4
F	8 - 5"	Jun-4-90			6 - 4"	Jun-4-90	2 - 4"	Jun-4-90	EDSM	5
G	8 - 5"	Jun-4-90			4 - 4"	Jun-20-90	12 - 4"	Jun-20-90	IIT	5
G1	8 - 5"	Jun-4-90	4 - 4"	Jun-20-90	6 - 4"	Jun-26-90	12 - 4"	Jun-20-90	A/C MOD	6
G2	12- 5"	Jun-4-90	4 - 4"	Jun-20-90	6 - 4"	Jun-26-90	12 - 4"	Jun-20-90	A/C MOD	3.6
H			7 - 4"	Jun-4-90	4 - 4"	Jun-4-90	12 - 4"	Jun-4-90	IIT	
I	4 - 5"	Jun-4-90							GATES 31-34	
J	4 - 5"	Jun-4-90	4 - 4"	Jun-20-90	4 - 4"	Jun-20-90	8 - 4"	Jun-20-90	FUTURE	
K	4 - 5"	Jun-20-90			4 - 4"	Jun-20-90	8 - 4"	Jun-20-90		
L										
M										
N										
O	20 - 5"	Jun-29-90			8 - 4"	Jun-19-90			EDSM	7
P	4 - 5"	Jun-20-90			8 - 4"	Jun-20-90				
Q	16 - 5"	Jun-26-90	4 - 4"	Jun-26-90	12 - 4"	Jun-4-90	12 - 4"	Jun-4-90	ITB	4, 9
R			4 - 4"	Jun-4-90	12 - 4"	Jun-4-90	16 - 4"	Jun-4-90	ITB	
S	8 - 5"	Jun-4-90	4 - 4"	Jun-20-90	8 - 4"	Jun-4-90	8 - 4"	Jun-4-90	ITB	8
T	24 - 5"	Jun-4-90	4 - 4"	Jun-4-90	12 - 4"	Jun-4-90	12 - 4"	Jun-4-90	ITB	8
U	8 - 5"	Jun-4-90	4 - 4"	Jun-26-90	4 - 4"	Jun-21-90	6 - 4"	Jun-21-90	ITB	9
V					4 - 4"	Jun-21-90	4 - 4"	Jun-21-90		
W	4 - 5"	Jun-21-90			2 - 4"	Jun-21-90	2 - 4"	Jun-21-90		10
X										
Y										
Z										

* Emergency Power System (EPS)

Notes:

1. Communication ducts will be in a handhole system along the Ewa side of Rogers Boulevard.
2. Handhole system through duct section "C" may include HIA communications.
3. HECo ductbanks consist of 1 - 2H X 2W & 1 - 2H X 4W ductbanks separated by 4 feet.
4. HECo ductbanks consist of 2 - 2H X 4W ductbanks separated by 4 feet.
5. HECo ductbank is 2H X 4W.
6. Existing Hawaiian Telephone and HIA communications ducts shall be supplemented or replaced to provide total duct requirement. Other ductlines to relocated manhole 116 shall match existing. EPS ducts will use existing Electric Manholes.
7. HECo ductbank consists of 2 - 2H X 4W & 1 - 2H X 2W ductbanks separated by 4 feet.
8. EPS ductline may be in duct section "S" or "T", but must extend to new generator plant.
9. EPS ducts needed to support permanent APM maintenance facility and any future loads on Aolele Street.
10. Provides interim connection to Lagoon Drive duct system. Permanent configuration to be installed with Cargo City.

ATTACHMENT A



PROPOSED HIA DUCT SYSTEM

Sheet 1 of

ATTACHMENT

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

IN REPLY REFER TO:

AIR-EN
91.33

January 25, 1991

Mr. William A. Bonnet
Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

Dear ~~Mr. Bonnet~~ Bill:

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments regarding the subject report. We provide the following response.

1. Figure 7 of the DEIS was the conceptual plan of the electrical system at the time of publication of the utility report in Appendix B. Since then, our consultant, M & E Pacific, has been reviewing the plan and producing the criteria to be used in the design. According to M & E Pacific, there will be at least one more revision to the electrical layout before it is finalized. As in the past, M & E Pacific and my staff will be coordinating the effort with your company.

2-4. We will incorporate your comments into the Final EIS. *(Pages I-10, II-25 and Appendix B)*

If you have any question, please contact Mr. Walter Nishigata of my staff at 836-6407.

Very truly yours,

Owen

Owen Miyamoto
Airports Administrator

bc: EKNA

JOHN WAIHEE
GOVERNOR
ROGER A. ULVELING
DIRECTOR
BARBARA KIM STANTON
DEPUTY DIRECTOR
LESLIE S. MATSUBARA
DEPUTY DIRECTOR

DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM

ENERGY DIVISION, 335 MERCHANT ST., RM. 110, HONOLULU, HAWAII 96813 PHONE: (808) 548-4080 FAX: (808) 531-5243

90:887e

December 5, 1990

RECEIVED
DEC 10 1990
EDWARD K. NODA & ASSOCIATES

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental
Quality Control
465 S. King Street, Room 104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement (DEIS) for Honolulu International Airport Master Plan 2010

We note the substantial additional electricity demand that is projected for the new facilities in this DEIS (Appendix B, pp. 26-30). We note also the expressed intent to consider the use of energy conservation measures in the design, construction, and operation of the new facilities (pp. IV-57, V-11, 13). However, we would urge that the final EIS incorporate specific language committing the Department of Transportation to the utilization of energy conservation measures. The airport's new facilities should become examples of how the use of new energy efficient technologies will be used in State construction.

Also, we note that Section 226-18, Hawaii Revised Statutes, was omitted from the discussion in Chapter V on the relationship of the proposed actions to the State Plan. Section 226-18, as amended by the Legislature in 1990, makes a clear statement that it is State policy to "promote prudent use of power and fuel supplies through conservation measures including...adoption of energy-efficient practices and technologies." We think it is appropriate to reference this section of the State Plan in the final EIS.

Thank you for the opportunity to provide comments. I hope they will be useful to you.

Sincerely,

Maurice H. Kaya
Energy Program Administrator

MHK/PE:do

cc: Walter Nishigata
James G. Dittmar

EKNA

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO:

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

AIR-EN
91.30

JAN 3 1

To: Mr. Maurice H. Kaya
Energy Program Administrator
Department of Business, Economic Development and Tourism

From: Owen Miyamoto
Airports Administrator

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments on the subject report. With regard to your first comment, let me assure you that the design criteria documents for all of our projects meet Federal, State and local requirement, laws and codes.

In our efforts to implement energy conservation measures, we are installing a Central Chiller System which is planned to be much more efficient than the existing air conditioning system. Another innovation which is being constructed at the Interisland Terminal No. 3 is an ice storage chiller system which is "state-of-the-art". It will replace the existing ice storage chiller system, and as designed, will supplement the baseline conventional chiller system to meet cooling demands. *(Page IV-67)*

We will reference Section 226-18 of the Hawaii Revised Statutes in the Final EIS. *(Pages V-10 to V-11)*

If you have any questions, please contact Mr. Walter Nishigata of my staff at 836-6407.

bc: EKNA

104

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES

KEITH W. AHUE
MANABU TAGOMORI
RUSSELL N. FUKUMOTO

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

REF:OCEA:JN

File No.: 91-181
Doc. No.: 9423E

DEC 18 1990

MEMORANDUM

TO: Office of Environmental Quality Control

FROM: William W. Paty, Chairperson
Board of Land and Natural Resources

SUBJECT: DEIS Honolulu International Airport Master Plan 2010
TMK: 1-1-01; 1-1-02; 1-1-03; 1-1-04; 1-1-14; 15, 16; 1-1-70

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed the materials you submitted and have the following comments.

Most of the Master Plan's proposed improvements are away from the shoreline. One exception is the proposed relocation of fuel facilities to an area just south of Keehi Beach Park. The proposed fuel facility, a tank farm, would include berms surrounding tanks that would be able to contain the tank's volume. Also the ground preparation would include material to prohibit underground contamination through seepages. This document briefly discusses alternate sites for the tank farm but concludes that the Keehi Lagoon site is preferred on the basis of cost-effectiveness.

If a fuel spill accident was to occur in Keehi Lagoon, it could impact an estuary area just to the north (at the convergence of Moanalua and Kalihi Streams), an area important to the commercial tuna fishery as a baitfish source. The area also serves recreational fishery interests and is designated as a canoe regatta site in the State's Keehi Lagoon Development Master Plan. These concerns have not been fully addressed in the subject draft plan.

RECEIVED
DEC 19 1990
EDWARD K. NO... & ASSOCIATES

The project area is partially fill and is land previously developed. Therefore, we believe there will be "no effect" on significant historic sites.

We will have further comments on the final EIS upon its completion.

Thank you again for your cooperation in this matter. Please feel free to call Bob Johnson of our Office of Conservation and Environmental Affairs, at 548-7837, if you have questions.

William W. Paty

cc: DOT
Edward K. Noda

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO:

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

AIR-EN
91.34

January 25, 1991

To: Mr. William W. Paty, Chairperson
Board of Land and Natural Resources

From: Mr. Owen Miyamoto
Airports Administrator

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments on the subject report.

A study on this matter was conducted by OI Consultants and completed in October, 1990. The Final EIS will contain a discussion of the potential marine impacts from a fuel spill into Keehi Lagoon. *(Pages IV-15 to IV-16)*

If you have any question, please contact Mr. Walter Nishigata of my staff at 836-6407.

bc: EKNA

STATE OF HAWAII 1959

OFFICE OF STATE PLANNING
Office of the Governor
STATE CAPITOL, HONOLULU, HAWAII 96813 TELEPHONE (808) 548-5893

JOHN WAIHEE, Governor

December 28, 1990

MEMORANDUM

TO: The Honorable John Waihee, Governor
State of Hawaii
c/o Office of Environmental Quality Control

SUBJECT: Draft Environmental Impact Statement (Oct. 1990)
Honolulu International Airport
Honolulu, Oahu, Hawaii

We have reviewed the Draft Environmental Impact Statement (DEIS) prepared for various proposed projects at the Honolulu International Airport (HIA) over the 20-year period from 1990 to 2010. The following comments are offered for your consideration.

Passenger Forecasts

The improvement and expansion of HIA is based on the forecasted increases in passenger demand and aircraft operation levels. We find that the DEIS does not provide sufficient information on the underlying assumptions and methodologies used in generating the aviation demand forecasts in Chapter I. We have not been able to determine, based on the information provided, whether the M-K projections of the Department of Business, Economic Development and Tourism were incorporated in the demand forecasts. The EIS should address the extent to which the M-K projections have been utilized and should explain the other assumptions and methodologies used in preparation of the demand forecasts. Assuming the M-K projections were utilized, and recognizing that planning for infrastructure should anticipate maximum need, we question whether expansion as envisioned is warranted and sustainable.

Noise Impacts

Due to the importance of noise considerations in land use planning, we suggest that an additional figure be prepared showing the year 2007 noise contours. This would supplement Figure IV-3 which shows the 1987 airport noise contours.

Thank you for the opportunity to comment. We apologize for the tardiness of these comments.

Harold S. Masumoto

Harold S. Masumoto
Director

cc: State DOT, Airports Division (Attn: Mr. W. Nishigata)
Edward K. Noda and Associates (Attn: Mr. J. Dittmar)
OEQC

EKNA

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
AL PANG
JOYCE T. OMINE
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

AIR-EN
91.309

May 10, 1991

To: Mr. Harold S. Masumoto, Director
Office of State Planning

From: Mr. Owen Miyamoto, Airports Administrator
Department of Transportation

Subject: DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
HONOLULU INTERNATIONAL AIRPORT MASTER PLAN 2010

Thank you for your comments. We are providing the following responses to your comments.

Passenger Forecasts

The passenger forecasts used as a basis for the Master Plan and the DEIS for Honolulu International Airport (HIA) are based on forecasts prepared as part of the Statewide Airport System Plan (SASP). Attached is the section on the methodology and assumptions used in preparing the Aviation Demand Forecasts from the SASP document. This letter and its attachment should address your initial concern on the relationship of the forecasts and M-K projects.

Based on recent discussions involving Office of State Planning (OSP), Department of Business, Economic Development & Tourism (DBED), and Department of Transportation (DOT) Airports Division staff, we have explained that some adjustments were made to the basic M-K projections in deriving the SASP forecasts. The forecasts were based on visitor and population projections prepared by the State DBED in the 1988 DBED M-K Series projections with some adjustments made to account for actual visitor growth between 1985 and 1989 after discussions with DBED.

This adjustment resulted in approximately a 5 percent increase in the forecast passenger volumes for 2010 than would have occurred using the published M-K Series projections. For the Honolulu

International Airport this would have resulted in a forecast of 35,105,000 passengers by 2010 compared to the 36,956,000 passengers indicated in the Master Plan. However, it should also be recognized that these forecasts are only to the year 2010 and sound airport planning practice should ensure that space is provided/reserved on the Master Plan for potential needs beyond the current 2010 planning period.

In our recent discussions with the DBED, we were also informed that the M-K projects are essentially a forecast based on economic activity and trends. The M-K projections in themselves are not demand goals. Therefore, the expansion envisioned for HIA is based on our planning forecasts derived from the M-K projections combined with our planning assumptions.

Noise Impacts

Based on the 1989 HIA Part 150 Noise Compatibility Program, the 1987 Noise Contours represents the largest aircraft noise impact on the environs. The 2007 noise contours are attached for your use. However, these are based on forecasts completed for the 1989 HIA Part 150 study.

If you have a question, please contact Mr. Walter Nishigata of my staff at 836-6407.

bc: EKNA

7.2 AVIATION DEMAND FORECASTS

Aviation demand forecasts for the State of Hawaii were prepared based on the visitor and population data presented in Section 7.1. As presented, the data account for a number of variables which have an effect on the future aviation activity in the State. In addition to the historical and projected data provided in Section 7.1, other considerations and assumptions were used in developing the aviation demand forecasts, and these are presented in this section.

These forecasts will be affected by fluctuating economic and political conditions. The actual results achieved may, therefore, vary from the forecast results, and such variations could be substantial.

7.2.1 Forecast Methodology

Several multiple regression analyses were applied to develop forecast total passengers both Statewide and for the individual counties. The regression analyses were prepared using historical passenger data and, as applicable, historical and forecast data of visitors, population and average daily visitor census as variables.

The first set of regression analyses were prepared using the "Population and Economic Projections for the State of Hawaii to 2010 (Series M-K)" prepared by the Department of Business and Economic Development in November 1988, and presented in Table 7-2. The 1988 M-K Series provide for a continuing high rate of visitor growth during the late 1980s. These published visitor industry projections expressed as average annual percentage increases are as follows:

Years	Percent	Visitors
1985-1990	6.0	6,521,000
1990-1995	3.5	7,746,000
1995-2000	3.0	8,979,000
2000-2005	2.5	10,159,000
2005-2010	2.5	11,494,000

According to representatives of DBED, the 1988 M-K Series differ from the earlier M-F Series in that consideration is given to both the supply and the demand in the new series. The previous M-F Series represented a demand-only forecast. In the M-K Series the projected distribution of occupied rooms for Oahu and the Neighbor Islands are taken into consideration from the supply side, i.e., what levels of visitors each Island can reasonably be expected to accommodate. The supply side takes

into consideration the demographics and support for Oahu and the Neighbor Islands and include population (available employees), housing, and additional infrastructure required to support increased visitors and visitor accommodations.

According to DBED, the forecasts also take into consideration the economies of the United States and Japan, Hawaii's primary visitor-generating regions. Higher levels of Neighbor Island tourism have been projected in the M-K Series, a reflection of the higher level of tourism projected for the State through 2010. The levels of tourism to the Neighbor Islands are distributed primarily based on the projections of occupied visitor rooms among the individual counties.

Data provided by the Hawaii Visitors Bureau in October 1989 estimated that total overall visitor growth to the State in 1989 could be approximately 8 percent over 1988 and would exceed the DBED M-K Series projections. Based on discussions with DBED representatives, a second set of regression analyses were prepared using unpublished DBED short-term economic forecasts for the State through 1995. This short-term forecast provides for an 8 percent growth in visitors over 1988 levels, or a total of 6,641,820 visitor arrivals in 1989.

The revised short-term forecasts provide for 8,112,000 visitor arrivals in 1995 compared to the 7,746,000 published in the M-K Series, or an increase of 5 percent. The M-K Series annual percentage visitor increases were then applied to the 1995 through 2010 period as follows:

Years	Percent	Visitor Arrivals
1990-1995	3.4	8,112,000
1995-2000	3.0	9,500,000
2000-2005	2.5	10,700,000
2005-2010	2.5	12,100,000

Airport passenger data for 1989 were also compiled based on State DOT statistics. The forecast annual percentage increases in total passengers for 1989 compared to 1988 are as follows:

Mainland passengers	=	5.1 percent
International passengers	=	10.8 percent
Total overseas passengers	=	6.7 percent
Interisland passengers	=	7.5 percent
Total passengers	=	7.1 percent

The 7.1 percent increase in total passengers for 1989 compares to a 8.1 percent increase in visitors for 1989.

7.2.2 Forecast Assumptions

Discussions were held with representatives of the Office of State Planning, the State Department of Business and Economic Development, the Hawaii Visitors Bureau and the individual County Planning Departments. In addition, discussions were held with representatives of the Hawaii Hotel Association, Honolulu Airlines Committee, airlines providing overseas and interisland service to the State, and various tour operators. As a result of the discussions with the above and representatives of the State Department of Transportation, Airports Division, two scenarios for future Statewide aviation activity were prepared using two basic assumptions:

Scenario One: All international flights are assumed to be through Honolulu International Airport.

Scenario Two: Some international flights are assumed to operate non-stop to Kahului, Keahole and Lihue Airports during the forecast period.

The following assumptions were used in both scenarios. Additional assumptions regarding direct international overseas service to the Neighbor Islands are presented in the discussion of Scenario Two in Section 7.20.

The economic, demographic and visitor projections prepared by the Department of Business and Economic Development (DBED) are assumed to be satisfactory for purposes of these aviation demand forecasts. For the purposes of developing these passenger forecasts, the DBED visitor forecasts based on the revised short-term forecasts discussed in Section 7.2.1 were used.

Overseas passengers have accounted for an increasing share of the total passengers in recent years. Overseas passengers are forecast to account for an increasing share of the total Statewide passengers through the forecast period from 43 percent in 1989 to 50 percent by 2010.

Eastbound passengers have accounted for an increasing percent of the total passengers to Hawaii in recent years. The forecast of strong economic growth in several Pacific Rim countries such as Korea, Taiwan, Hong Kong and Singapore in addition to Japan could provide increasing eastbound visitors to the State of

Hawaii. It is assumed that, with the potential of new and expanded visitor markets in the Pacific, eastbound passengers will continue to increase as a percent of the total passengers.

Based on historical passenger data obtained from the State of Hawaii, Department of Transportation, Airports Division, eastbound passengers have increased as a percent of the total overseas passengers from approximately 25 percent in 1980 to 29 percent in 1989. In addition, there is the potential for increased international visitors from other areas and for direct flights from other parts of the world, e.g., Europe. Based on historical data and the various discussions noted above, the international passengers are assumed to increase from 29 percent of the total overseas passengers in 1989 to approximately 35 percent of the total overseas passengers in 2010.

Even though U.S. Mainland passengers are forecast to continue to dominate the total passengers to the State, overseas westbound passengers are assumed to decrease as a percent of the total overseas passengers from about 71 percent in 1989 to approximately 65 percent of the total in 2010. Honolulu International Airport's share of total overseas westbound passengers is forecast to continue to decline from 86 percent of the total in 1989 to 78 percent in 2010.

Overseas mainland passengers to Keahole and Lihue Airports are assumed to increase at a higher percentage rate than at Kahului Airport. In 1988, the overseas passenger distribution for the Neighbor Islands was 80 percent at Kahului, 13 percent at Keahole and 7 percent at Lihue. For 1989, the percentages were approximately 76 percent at Kahului, 15 percent at Keahole and 9 percent at Lihue. This distribution is expected to change over time to 55 percent for Kahului, 25 percent for Keahole and 20 percent for Lihue by 2010. Although direct overseas passenger service to Hilo was suspended in 1986, it has been assumed for the purpose of these forecasts that there will be some overseas service to Hilo during the forecast period. It is assumed that overseas mainland service to the Neighbor Island airports will not be constrained by airport facilities and services.

The forecasts of air carrier operations reflect DHC-7 aircraft operations being counted as commuter/air taxi by FAA at all airports in the future rather than as air carrier. This reporting change was initiated by FAA in 1989.

The commuter/air taxi passenger forecasts do not include helicopter air taxi passengers as these data are not reported to the State. However, commuter/air taxi operations forecasts do include helicopter air taxi operations. Commuter/air taxi operations also include glider and tow plane operations which occur at some airports in the State as well as the all cargo air taxi operations.

Helicopter operations have been counted as general aviation operations in the past at some airports. Therefore the commuter/air taxi operations show a significant increase in the 1989 to 1995 period, at some airports, as they include the DHC-7 and helicopter air taxi operations.

Based on airline questionnaires completed as part of the study and discussions with airline representatives, it is assumed that overseas flights at Honolulu International Airport will be primarily by B-747/DC-10/L-1011/MD-11 type aircraft in the future. At the Neighbor Island airports, overseas flights are expected to be by DC-10/L-1011/DC-8 type aircraft over the next 5 years and DC-10/L-1011/MD-11 type aircraft for the long range.

Interisland air carrier operations are expected to be by B-737, DC-9, MD-80, and BAe 146 type aircraft in the future. Interisland commuter/air taxi operations are expected to be by DHC-7, DHC-8, DHC-6, Cessna 402 and Piper-31 type aircraft in the future.

At the time the forecasts were prepared there was scheduled interisland air carrier service by three airlines. As a result lower enplaned passenger load factors were assumed initially with a gradual increase in the enplaned passenger load factors over the forecast period. If there is only interisland service by two airlines then the number of air carrier operations may be somewhat over estimated for the initial forecast periods.

Air cargo and mail volumes have been forecast to increase in proportion to forecast population and average daily visitor census increases in each County. The potential air cargo volumes at the Neighbor Island airports would tend to increase with the greater availability of direct overseas mainland and even international service. All-cargo aircraft operations are included in the forecasts of air carrier and commuter/air taxi operations according to the type of aircraft being used (eg., B-747, DC-8 and B-737 versus Cessna 208.)

General aviation activity was declining at many airports in the State through the mid-1980s. This decline in general aviation operations has been experienced on national, state and local levels beginning in the early 1980s. Since 1980, the number of active pilots has declined due to fewer student completions and the end of the veteran's bill which provided financial assistance for pilot training. General aviation activity has also declined because of overall economic conditions, higher fuel costs, and sometimes the decreased cost of commercial flights as a result of fare wars or introductory service fares.

However, several airports in the State have either experienced an increase in general aviation operations and based aircraft in recent years or at least a leveling of general aviation activity. Forecasts of fixed-wing based aircraft from 1990 to 2010 are assumed to approximate the forecast population increase for each County. Forecasts of helicopter based aircraft have been forecast to approximate the increase in average daily visitor census for each County.

The continued availability of Ford Island ALF in its present role for general aviation has been assumed in these forecasts. The implications of closure of Ford Island on other Oahu airports and any need for a new reliever airport are addressed elsewhere in the study.

Military aircraft operations are difficult to predict for the long term. Based on preliminary discussions with military representatives, and a review of military operations levels in recent years, it has been assumed that military operations will be essentially constant through the planning period. More detailed information on expected military operations at individual airports have been used in the individual airport master plans and FAR Part 150 studies prepared for airports in the State.

AIRPORTS DIVISION
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII

HONOLULU INTERNATIONAL AIRPORT
MASTER PLAN UPDATE AND
NOISE COMPATIBILITY PROGRAM

KFC AIRPORT, INC.
MANAGEMENT CONSULTANTS

1985 LAND USE & 2007 LDN NOISE CONTOURS

FIGURE B-5

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

December 7, 1990
RE:0567

Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Sir:

Draft Environmental Impact Statement (EIS)
Honolulu International Airport
Master Plan 2010
Honolulu, Oahu

The above referenced document describes component projects for implementation of the Honolulu International Airport (HIA) Master Plan from 1990 to 2010. Specific projects include expanding the Overseas Terminal Hardstands/Gates, and Diamond Head Concourse; relocating the HIA Satellite Fuel Farm; installing an Automated People Mover system and maintenance facility; adding a Central Chiller Plant; constructing an Aircraft Engine Runup pad and facility; installing a Microwave Landing System; acquiring land (Ualena Street properties); constructing a new Air Cargo/Industrial complex (Cargo City); developing the Kapalama property; constructing new Electrical Power Substations and Distribution systems; improving the roadway and adding parking; building a new landscaped Theme Park; relocating the Lei stands; and constructing an Aircraft Wash Pad (South Ramp).

The Environmental Center has reviewed this EIS with the assistance of Chuck Gee, Travel Industry Management; Peter Flachsbart, Urban and Regional Planning; Anders Daniels, Meteorology; and Lee Lyttle, Environmental Center.

General Comments

In the middle of the review period of this DEIS, we received a preliminary assessment and proposed Determination of Non-Significance for the acquisition of the Ualena Street properties which is listed in this EIS as a component of HIA's long range plans. Our reviewers feel that the proposed negative declaration was inappropriate and the property acquisition plans are subject to full environmental review because it constitutes an incremental step in the total development plans for HIA's expansion. This EIS was reviewed with the understanding that the Ualena Street property acquisition, as stated in the DEIS, is a part of the total proposed action.

Relocation of the HIA Satellite Fuel Farm (page III-4)

All of our reviewers have expressed concern over this section. The entire paragraph discusses the economic and logistic benefits of relocating this sizable fuel complex 'between the clear zones of Runways 26R and 22L'. The one sentence which discusses safety considerations states 'the site would be minimally subject to potential aircraft accidents'.

Given the potentially catastrophic consequences of an accident involving this much fuel so close to two active runways, our reviewers suggest that the EIS be expanded to include a risk analysis assessing the probabilities of a serious incident occuring over the life of the project. Such a study should also compare the losses incurred in a worst-case incident with the cost of relocation of the fuel farm to a safer site.

Visual Attributes (page IV-10)

HIA is where most visitors gain their first impression of the State. Given the fact that tourism is such an important part of Hawaii's economy, the visual qualities of HIA are important. The EIS should expand its discussion to include an aesthetic assessment of the Master Plan and its publicly oriented components.

Socioeconomic Impacts (page IV-20)

The EIS states that 'hardships' will be felt by those businesses forced to relocate due to elements of HIA expansion. It should further state which businesses, if any, beyond being inconvenienced, could potentially not survive the move and result in a loss of long-term employment.

Transportation Facilities (page IV-22-34)

The EIS fails to consider cumulative and additive impacts of traffic projected from the proposed Keehi Lagoon Recreation project which will affect roads in the immediate vicinity of the airport. A "best estimate" of such concurrent vehicular trips would significantly alter projections of levels of service, as well as the adequacy of the described mitigative measures.

Tables IV-7 and 8 indicate numerous 'E' and 'F' levels of service on the surrounding roads due to this and associated projects. Similar tables would be most helpful indicating resulting levels of service if the proposed mitigative measures are implemented.

HIA will be one of the primary traffic nodes of the proposed Rapid Transit System. The EIS should expand its discussion to an assessment of what effect this project would have on the traffic projections stated.

Air Quality (page IV-35)

The Air Quality Impact Analysis for a project of this magnitude and scope should contain original monitoring data in order increase the confidence levels of the modeling which was done. The EIS also should expand its discussion regarding increased ozone concentrations and its impact on the surrounding populated area.

Noise Quality (page IV-38)

The DEIS provides a 1987 noise contour map. A similar map should be shown for the existing 1990 condition as well as for projections through to the year 2010. The DEIS also infers that quieter aircraft will more than compensate for the increases in the projected numbers of flight operations. This needs to be substantiated, perhaps through modeling or the experience of other airports which have instituted stringent noise regulations.

Thank you for the opportunity to comment on this document.

Yours truly,

John T. Harrison, Ph.D.
Environmental Coordinator

cc: DOT
Edward K. Noda and Assoc. ✓
Roger Fujioka
Peter Flaschbart
Chuck Gee
Anders Daniels
Lee Lyttle

EMA

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
AL PANG
JOYCE T. OMINE
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO:

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

AIR-EN
91.25

March 21, 1991

Mr. John T. Harrison, Ph.D.
Environmental Coordinator
Environmental Center
University of Hawaii at Manoa
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Dr. Harrison:

Subject: Honolulu International Airport (HIA)
Draft Environmental Impact Statement (DEIS)

Thank you for your comments regarding the subject document. We have reviewed them and offer the following response.

General Comments:

Regarding the Ualena Street Property Acquisition Environmental Assessment (EA), we will be retracting the EA. A letter has been sent to OEQC advising them of this matter.

Relocation of the HIA Satellite Fuel Farm:

The location of the new Fuel Farm is the most cost effective solution among the alternative sites reviewed by our planners. Its proximity to existing fuel transfer pipes from the Sand Island Bulk Fuel Storage facility minimizes the cost of equipment, materials and earthwork. Also, the probability of the new Fuel Farm location being involved in an aircraft related accident is similar to other possible locations within the airport boundary. Any suitable location, within the airport boundary, is either near or beneath an aircraft departure or approach path. This location has been reviewed and approved by the Federal Aviation Administration with regard to airspace and safety. This location is approximately 900

feet from the centerline of Runway 8L-26R and approximately 1,150 feet from Runway 4R-22L.

Visual Attributes:

We agree the airport is the first view many visitors have of our islands and the projects should represent our State. However, the EIS is a document which is prepared prior to the final design of the projects being considered and therefore, aesthetic renditions of the projects mentioned are not available at this time. I would like to assure you that all buildings will be designed to meet the DOTA's aesthetic requirements.

Socioeconomic Impacts:

The Final EIS will contain a detailed discussion on the Socioeconomic impacts of the projects, namely, the Ualena Street Tenant Relocation. Discussions with the tenants indicate no significant negative impacts to their businesses. *(Pages II-19 to II-20 and IV-23 to IV-26)*

Transportation Facilities:

The EIS does consider the proposed Keehi Lagoon Drive traffic impacts in the traffic analysis. Also, it incorporates traffic generated by other developments which are planned in the vicinity of the airport within the 20 year horizon (1990 - 2010). This section will be modified to clarify these assumptions. *(Page IV-37 to IV-38)*

We have not completed a full traffic analysis of the area with regards to all of the proposed changes and mitigation measures. The continuing demand at the airport has created a very dynamic system. Therefore, we are continuing with our Traffic Analysis and all changes and mitigation measures will be reviewed by the DOT-Highways Division prior to implementation.

When the DEIS was written the alignment of the Rapid Transit System was not decided upon and, therefore, was not included in the Traffic Analysis. At present, although the alignment is set, the quantitative effect of the Transit System on HIA traffic is not definitized. Therefore, in our traffic analysis we will continue to use the conservative traffic volumes presented in the DEIS. We will briefly assess the potential effect of the C & C of Honolulu Rapid Transit System in our Final EIS. *(Page IV-38)*

Air Quality:

For this Environmental Analysis, no field monitoring was undertaken. At the present level of air emissions at the airport, we felt a comprehensive air quality monitoring program was not necessary. However, we will monitor future traffic conditions and if the situation is warranted, a comprehensive monitoring program will be pursued. The increase in air traffic will continue regardless of the status of the projects stated in the EIS and emission levels will increase with the growth of air traffic. Also, several of the projects will relieve several present emission "hotspots" on the airport. For example, the New Interisland Terminal, with its integrated parking facility, will tend to reduce curb loading and unloading, and therefore, reduce idling and congestion.

Noise Quality:

A Part 150 Noise Compatibility Study for HIA was completed recently, and noise maps for the years 1987, 1992 and 2007 were developed. We feel this noise analysis is adequate for the EIS since the number and types of operations remain within the scope of the recent study. *(Page IV-45)*

Also, the DEIS does not infer that quieter aircraft will compensate for the increases of traffic, this was a conclusion based on the Part 150 Study and the associated numerical modelling.

If you have any question, please contact Mr. Walter Nishigata of my staff at 836-6407.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

bc: EKNA

RESPONSES OF NO COMMENTS

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

WALTER M. OZAWA
DIRECTOR

ALVIN K.C. AU
DEPUTY DIRECTOR

November 2, 1990

Office of Environmental Quality Control
State of Hawaii
465 South King Street, Room 104
Honolulu, Hawaii 96813

Gentlemen:

Subject: Environmental Impact Statement (EIS)
DEIS Honolulu International Airport Master Plan 2010
Tax Map Key: 1-1-01 to 04, 1-1-14 to 16, 1-1-70

We have no comments to offer on the EIS for the DEIS Honolulu International Airport Master Plan 2010.

Thank you for the opportunity to review the EIS.

Sincerely,

ALVIN K. C. AU, Acting Director

AKCA:sl

cc: Department of Transportation
✓Edward K. Noda and Associates

RECEIVED
NOV - 5 1990
EDWARD K. NODA & ASSOCIATES

(P)1880.0

OCT 30 1990

The Honorable John Waihee
Governor
State of Hawaii
c/o Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Honolulu International Airport
Master Plan 2010

Thank you for the opportunity to review the subject document. We have no comments to offer.

Should there be any questions, please contact Mr. Ralph Yukumoto of the Planning Branch at 548-7192.

Respectfully,

RUSSEL S. NAGATA
State Comptroller

RY:hc
cc: State Department of Transportation
✓Edward K. Noda and Associates
Office of Environmental Quality Control

RECEIVED
NOV - 1 1990
EDWARD K. NODA & ASSOCIATES

JOHN WAIHEE
GOVERNOR

YUKIO KITAGAWA
CHAIRPERSON, BOARD OF AGRICULTURE

SUZANNE D. PETERSON
DEPUTY TO THE CHAIRPERSON

State of Hawaii
DEPARTMENT OF AGRICULTURE
1428 So. King Street
Honolulu, Hawaii 96814-2512

FAX: 548-6100

Mailing Address:
P. O. Box 22159
Honolulu, Hawaii 96822-0159

RECEIVED
DEC 1? 1990
EDWARD K. NODA & ASSOCIATES

December 12, 1990

COPY

To: Governor, State of Hawaii
c/o Office of Environmental Quality Control
Department of Health

From: Yukio Kitagawa, Chairperson
Board of Agriculture

Subject: Draft Environmental Impact Statement (DEIS) for
Honolulu International Airport Master Plan 2010
TMK: 1-1-01; 1-1-02; 1-1-03; 1-1-04;
1-1-14; 15; 16; 1-1-70

The Department of Agriculture has reviewed the subject document and has no comments to offer. However, two departmental functions (Plant Quarantine Branch of Plant Industry Division and the Animal Holding Facility, Animal Quarantine Branch, Animal Industry Division) with facilities and personnel at the Honolulu International Airport will be affected by the proposed developments outlined in the Master Plan. To ensure that the carrying out of these two important functions is not frustrated by unanticipated problems (i.e., poor location, inadequate space), Department of Agriculture personnel have been and continue to be in contact with consultants responsible for their relocation and necessary improvements.

c: Department of Transportation
Edward K. Noda and Associates
Plant Industry, Plant Quarantine Branch
Animal Industry, Animal Quarantine Branch

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

IN REPLY REFER TO

AIR-EN
91.35

January 25, 1991

To: Mr. Yukio Kitagawa, Chairperson
Board of Agriculture

From: Mr. Owen Miyamoto Owen Miyamoto
Airports Administrator

Subject: Draft Environmental Impact Statement (DEIS)
Honolulu International Airport Master Plan 2010

Thank you for reviewing the subject document. We will continue to work with your staff to ensure a smooth transition to your new locations.

cc: EKNA

JOHN WAIHEE
GOVERNOR

ALEXIS T. LUM
MAJOR GENERAL
ADJUTANT GENERAL

MYLES M. NAKATSU
COLONEL
DEPUTY ADJUTANT GENERAL

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816-4495

October 26, 1990

Engineering Office

Governor, State of Hawaii
c/o Officer of Environmental Quality Control
465 South King Street, Rm. 104
Honolulu, Hawaii 96813

Gentlemen:

DEIS HONOLULU INTERNATIONAL AIRPORT MASTER PLAN 2010

Thank you for providing us the opportunity to review the above subject project.

We have no comments to offer at this time regarding this project.

Sincerely,

Jerry M. Matsuda

Jerry M. Matsuda
Lieutenant Colonel
Hawaii Air National Guard
Contracting & Engineering Officer

cc: Mr. Walter Nishigata, D.O.T.
Mr. James G. Dittmar,
Edward K. Noda and Associates

RECEIVED
OCT 29 1990
EDWARD K. NODA & ASSOCIATES

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P. O. BOX 50004
HONOLULU, HAWAII
96850

November 26, 1990

Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 S. King Street, Rm. 104
Honolulu, HI 96813

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement (DEIS) - Honolulu International Airport Master Plan 2010

We have no comments to offer at this time; however we would appreciate the opportunity to review the final EIS.

Sincerely,

ACTING
WARREN M. LEE
State Conservationist

cc:
Department of Transportation, 869 Punchbowl Street, Honolulu, HI 96813
ATTN: Walter Nishigata
Edward K. Noda and Associates, 615 Piikoi St., Ste. 1000, Honolulu, HI 96814 ATTN: James G. Dittmar
Office of Environmental Quality Control, 465 S. King St., Rm. 104, Honolulu, HI 96813

RECEIVED
NOV 28 1990
EDWARD K. NODA & ASSOCIATES

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858-5440

November 9, 1990

REPLY TO
ATTENTION OF

Planning Division

RECEIVED
NOV 15 1990
EDWARD K. NODA & ASSOCIATES

Dr. Bruce Anderson
Acting Interim Director
Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Dr. Anderson:

We have reviewed the Draft Environmental Impact Statement for Honolulu International Airport Master Plan 2010. The following comments are offered:

a. A Department of the Army permit is not required.

b. The Flood Insurance Rate Map information presented on page IV-9 of the DEIS is correct.

Sincerely,

Kisuk Cheung
Director of Engineering

Copies furnished:

State of Hawaii Department of Transportation
Attn: Mr. Walter Nishigata
869 Punchbowl Street
Honolulu, Hawaii 96813

Edward K. Noda and Associates
Attn: Mr. James G. Dittmar
615 Piikoi Street, Suite 1000
Honolulu, Hawaii 96814

JOHN WAIHEE
GOVERNOR

EDWARD Y. HIRATA
DIRECTOR

DEPUTY DIRECTORS
DAN T. KOCHI (PRIMARY)
RONALD N. HIRANO
JEANNE K. SCHULTZ
CALVIN M. TSUDA

IN REPLY REFER TO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
AIRPORTS DIVISION
HONOLULU INTERNATIONAL AIRPORT • HONOLULU, HAWAII 96819

AIR-EN
91.36

January 25, 1991

Mr. Kisuk Cheung
Director of Engineering
Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858-5440

Attn: Planning Division

Dear Mr. Cheung:

Subject: Draft Environmental Impact Statement
Honolulu International Airport Master Plan 2010

Thank you for reviewing the subject document. We acknowledge that a permit is not needed for the subject projects and that the Flood Insurance Rate Map Information is correct.

Very truly yours,

Owen Miyamoto

Owen Miyamoto
Airports Administrator

bc: EKNA

CHAPTER VIII

REFERENCES

AECOS, Inc. 1979. "Post Construction Water Quality, Benthic Habitat and Epifauna Survey for the Reef Runway, Honolulu International Airport." Final Rept. Prep. for The Ralph M. Parsons Company.

AECOS, Inc. 1986. "Benthic Survey of Hickam Harbor and Marine Pond, Honolulu International Airport Reef Runway." Prep. for KFC Airport, Inc.

Aries Consultants, Ltd. 1990. Memoranda of May 16, 1990 from R. J. Sanders containing passenger and aircraft operations forecasts.

Barton-Aschman Associates, Inc. 1990." Honolulu International Airport Traffic and Parking Study." Prep. for State of Hawaii, Department of transportation, Airports Division.

Berger, A.J. and R.T. Walker. 1971. "Keehi Lagoon Bird Survey." Prepared for The Ralph M. Parsons Company.

Bowers, R. 1976. "Marine Ecology Survey." Appendix B in: Towill Corporation, R.M. 1976. "Environmental Quality Control Monitoring Program for the Reef Runway." Final Rept. Prep. for The Ralph M. Parsons Company.

Brock, R. 1986. "Postconstruction Biological Survey for the Honolulu International Airport Reef Runway: Eight Years Later." In: "Survey of the Water Quality, Benthic Habitat and Infaunal Populations for Keehi Lagoon, Hickam Harbor and Marine Pond, Honolulu International Airport." Prep. for KFC Airport, Inc.

Chapman, G.A. 1979. "Honolulu International Airport, Reef Runway Post-Construction Environmental Impact Report." Volume 2. Technical report. Prep. for State of Hawaii, Dept. of Transportation, Air Transportation Facilities Division.

City and County of Honolulu. 1987. National Flood Insurance Program, Flood Insurance Rate Map (FIRM). Community-Panel No. 150001 0115 B.

City and County of Honolulu, Department of General Planning. 1988. *General Plan.*

Ebisu, Y. & Associates. 1990. "Study of Potential Noise and Vibration Impacts Associated with the Proposed Automated People Mover System, Honolulu International Airport, Oahu." Prep. for Pacific Planning & Engineering, Inc.

Engineering-Science, Inc. 1990. Interim Summary Report. Tasks 6 and 6A: "Groundwater Monitoring Wells." International Terminal Building (ITB), Honolulu International Airport. Prepared for State of Hawaii, Department of Transportation, Airports division.

Environmental Communications, Inc. 1990. " Honolulu International Airport, International Terminal Building. Environmental Assessment." Prep. for State of Hawaii, Department of Transportation, Airports Division.

Helber, Hastert and Kimura Planners, et al. 1989. " Honolulu Waterfront Master Plan, Pre-Final Report." Prep. for State of Hawaii, Office of State Planning.

Hirata, Ernest K. and Associates, Inc. 1989. "Geotechnical Investigation of the Proposed ITB Complex and Diamond Head Concourse Project Areas." Prep. for State of Hawaii, Department of Transportation, Airports Division.

KFC Airport, Inc. and Edward K. Noda and Associates, Inc. 1989. "HIA Master Plan Update & Noise Compatibility Program. Volume 2: Part 1. FAR Part 150 - Noise Exposure Maps and Noise Compatibility Programs." Prep. for State of Hawaii, Department of Transportation, Airports Division.

KFC Airport, Inc. 1989. "HIA Master Plan Update & Noise Compatibility Program. Volume 3: Environmental Assessment."

KPMG Peat Marwick. 1989. "International Terminal Study." Prep. for State of Hawaii, Department of Transportation, Airports Division.

Libby, L.D. 1976. *A Study of Concentrations of Carbon Monoxide and Hydrocarbons at Selected Locations in Honolulu*. Master of Science Thesis. University of Hawaii.

Mathews, J.G. (Construction Services, Ltd.). 1990. Letter to J. Cox, Project Manager, State of Hawaii, Department of Transportation, Airports Division, HIA. April 16, 1990.

Morrow, J.W. 1980. "Air Quality Analysis: Honolulu International Airport land Environs Master Plan Study."

Morrow, J.W. 1987. "Air Quality Impact Report, Honolulu International Airport."

Neal, Barry D. & Associates. 1990. "Air Quality Study for the Proposed Automated People Mover Project at Honolulu International Airport." Prep. for Pacific Planning & Engineering, Inc.

Noda, Edward K., and Associates, Inc. 1990. "Ke'ehi Lagoon Recreation Plan and Final Environmental Impact Statement." Prep. for State of Hawaii, Department of Transportation, Harbors Division.

OI Consultants, Inc. 1986. "Survey of the Water Quality, Benthic Habitat and Infaunal Populations for Keehi Lagoon, Hickam Harbor and Marine Pond, Honolulu International Airport." Prep. for KFC Airport, Inc.

OI Consultants, Inc. 1988. "Survey of the Water Quality, Benthic Communities and Avifaunal Populations of Ke'ehi Lagoon, Honolulu, Hawaii." Prep. for KFC Airport, Inc.

OI Consultants, Inc. 1990. "Department of Transportation Satellite Fuel Farm Relocation, Honolulu International Airport, Marine Impacts Analysis." Prep. for Environmental Communications, Inc.

Pacific Planning & Engineering, Inc. 1989. "Airport Trade Center Traffic Impact Assessment Report."

Park Engineering, Inc. 1980. Technical Memorandum. Task 6.3: "Solid Waste Analysis." Honolulu International Airport and Environs Master Plan Study. Prep. for State of Hawaii, Department of Transportation, Airports Division.

Parsons, Ralph M. Company. 1974. Air and Noise Quality Study for Honolulu International Airport.

Root, B.D., and B.D. Neal. 1989. "Air Quality Study for the Ke'ehi Lagoon Recreation Plan." Prep. for E. K. Noda and Assoc.

Smith, Wilber Associates. 1990. "Honolulu International Airport Masterplan Traffic Analysis." Draft Report Prep. for E.K. Noda and Assoc.

State of Hawaii, Department of Agriculture. 1977. "Agricultural Lands of Importance to the State of Hawaii" (Revised).

State of Hawaii, Department of Business and Economic Development. 1984. *State Energy Functional Plan*.

State of Hawaii, Department of Business and economic Development. 1984. *State Tourism Functional Plan*.

State of Hawaii, Department of Business and Economic Development. 1989. *State of Hawaii Data Book: A Statistical Abstract*. Honolulu.

State of Hawaii, Department of Health. 1989. *State Health Functional Plan*.

State of Hawaii, Department of Human Services. 1989. *State Human Services Functional Plan*.

State of Hawaii, Department of Labor and Industrial Relations. 1989. *State Employment Functional Plan*.

State of Hawaii, Historic Places Review Board. 1979. "Hawaii Register of Historic Places."

Towill Corporation, R.M. 1976. "Environmental Quality Control Monitoring Program for the Reef Runway." Final Rept. Prep. for The Ralph M. Parsons Company. 21 p. plus Appendices.

U.S. Department of Transportation, Federal Aviation Administration, Pacific Region. 1972. "Final Environmental Impact Statement, Reef Runway Project, Honolulu International Airport, Honolulu, Hawaii."

U.S. Department of Transportation. Federal Aviation Administration (FAA). 1985. Order 5050.4A. *Airport Environmental Handbook*.

Walker, R.L. 1978. "Ke'ehi Lagoon and Mitigation Areas Bird Survey." Final Rept. Prep for The Ralph M. Parsons Company by Hawaiian Biographics. 40 p. plus Appendices.

APPENDIX A

AIR QUALITY IMPACT ANALYSIS
HONOLULU INTERNATIONAL AIRPORT

Air Quality Impact Analysis
Honolulu International Airport

Submitted to:
Edward K. Noda and Associates
615 Piikoi Street, Suite 1000
Honolulu, Hawaii 96814

Submitted by:
ERC Environmental and Energy Services Co.
5510 Morehouse Drive
San Diego, California 92121

September 1990

TABLE OF CONTENTS

TABLE OF CONTENTS (Continued)

LIST OF FIGURES

LIST OF TABLES

AIR QUALITY IMPACT ANALYSIS
HONOLULU INTERNATIONAL AIRPORT

1. INTRODUCTION

Plans are currently being finalized for a major expansion program at the Honolulu International Airport (HIA). As part of the environmental impact statement of the planned expansion, ERC Environmental and Energy Services Company (ERCE) has been retained to conduct an evaluation of the anticipated future air quality impacts associated with the forecasted demand and expanded capacity of the airport.

Although not a direct source of air pollution, this major airport does act as a focal point for pollution sources, most notably emissions from vehicles travelling to and from the airport and aircraft landing and taking off at the airport. Fuel storage and transfer operations at the site constitute an additional source of hydrocarbon emissions, which figure prominently in the production of ozone. Depending on the local meteorology and topography, the pollution generated in the vicinity of the airport could be carried downwind and produce significant impacts in the nearby environs.

The purpose of the study presented in this report is to quantify the potential air quality impacts of HIA for the years 1989, 2000, and 2010. Background information related to regulatory requirements, present levels of pollution in the area, and climatological and meteorological conditions is presented in Section 2. Estimated short-term pollution impacts (i.e., those occurring during construction of the new airport facilities) are discussed in Section 3, while long-term, operational impacts are presented in Section 4, along with a discussion of the modeling methods and assumptions used to predict future pollutant levels. The impact assessment results are summarized, and possible mitigation measures are discussed in Section 5.

2. ENVIRONMENTAL BACKGROUND

2.1 REGULATORY SETTING

National Ambient Air Quality Standards (NAAQS) were set by the Federal Clean Air Act of 1970 (and amended in 1977), with states retaining the option to develop more stringent standards. These standards represent the maximum levels of pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. The six pollutants for which federal standards have been established are sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone (O_3), particulate matter less than 10 microns in size (PM-10), and lead. State standards, as defined in Chapter 11-59 of the Hawaii Administrative Rules, have been set for the same pollutants, with the exception of the particulate standards. In 1987 the federal government changed the total suspended particulate standards to standards for particulate matter less than 10 microns in diameter. The State of Hawaii particulate standards have not been changed as of this time. Both federal and state standards are summarized in Table 2-1. It should be noted that the state Ambient Air Quality (AAQS) Standards for CO and O_3 are considerably more stringent than the corresponding federal standards.

2.2 AMBIENT AIR QUALITY LEVELS

No ambient air quality data have been collected at or near the airport since 1980. Air sampling conducted in 1973, 1975 and 1979-1980 suggested that federal ambient air quality standards were being met, but that violations of the state CO standards were likely at locations with heavy traffic such as the interisland terminal (Morrow 1987).

Pollutant trends recorded at monitoring stations operating in Honolulu over the last several years have indicated that all ambient air quality standards are currently being met, with the exception of O_3, which has exceeded state standards, and CO, which has also been higher than state standards at some busy intersections. A summary of the air quality measurements taken near HIA from 1985 to 1988 is provided as Table 2-2 (taken from Barry D. Neal & Associates 1990). No data for NO_2 impacts are provided in the table because this pollutant is no longer monitored anywhere in the state. From 1971 through 1976 NO_2 annual-averaged concentrations monitored at Barbers Point ranged from 11 to 29 $\mu g/m^3$ (Barry D. Neal & Associates 1990).

Table 2-1

SUMMARY OF STATE OF HAWAII AND NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant	Units	Averaging Time	Maximum Allowable Concentration National Primary[2]	National Secondary[2]	State of Hawaii[2]
Suspended Particulate Matter	$\mu g/m^3$	Annual	--	--	60[1]
		24 Hours	--	--	150
Particulate Matter <10µ (PM-10)	$\mu g/m^3$	Annual	50	50	--
		24 Hours	150	150	--
Sulfur Dioxide	$\mu g/m^3$	Annual	80	--	80
		24 Hours	365	--	365
		3 Hours	--	1300	1300
Nitrogen Dioxide	$\mu g/m^3$	Annual	100	100	70
Carbon Monoxide	mg/m^3	8 Hours	10	--	5
		1 Hour	40	--	10
Ozone	$\mu g/m^3$	1 Hour	235	235	100
Lead	$\mu g/m^3$	Calendar Quarter	1.5	1.5	1.5

[1]Geometric mean
[2]Short-term standards not to be exceeded more than once per year

Table 2-2

ANNUAL SUMMARY OF AIR QUALITY MEASUREMENTS FOR MONITORING STATIONS NEAREST HONOLULU INTERNATIONAL AIRPORT

Parameter/Location	1985	1986	1987	1988
Sulfur Dioxide/Barbers Point				
No. of 24-Hr Samples	59	57	53	59
Range of 24-Hr Values ($\mu g/m^3$)	10-48	<5-10	<5-13	<5-19
Average Daily Value ($\mu g/m^3$)	24	<5	5	<5
No. of State AAQS Exceedances	0	0	0	0
Particulate/Downtown Honolulu				
No. of 24-Hr Samples	59	57	53	59
Range of 24-Hr Values ($\mu g/m^3$)	10-48	11-61	14-59	12-45
Average Daily Value ($\mu g/m^3$)	24	25	25	26
No. of State AAQS Exceedances	0	0	0	0
PM-10/Liliha				
No. of 24-Hr Samples	10	51	42	53
Range of 24-Hr Values ($\mu g/m^3$)	13-52	7-35	10-33	9-25
Average Daily Value ($\mu g/m^3$)	23	18	17	17
No. of State AAQS Exceedances	NA	NA	NA	NA
Carbon Monoxide/Downtown Honolulu				
No. of Days of 1-Hr Samples	342	348	345	--
Range of Daily Max. 1-Hr Values (mg/m^3)	0.0-10.4	0.2-13.5	0.3-11.1	0.4-7.4
Average Daily Maximum 1-Hr Value (mg/m^3)	1.5	2.2	1.7	2.6
No. of State AAQS Exceedances	1	3	1	0
No. of Days of 8-Hr Samples	246	213	228	--
Range of Daily Max. 8-Hr Values (mg/m^3)	0.1-4.4	0.3.4.7	0.3-3.9	--
Avg. Daily Maximum 8-Hr Value (mg/m^3)	1.3	1.4	1.2	---
No. of State 8-Hr AAQS Exceedances	0	0	0	--

Table 2-2 (Continued)

ANNUAL SUMMARY OF AIR QUALITY MEASUREMENTS FOR MONITORING STATIONS NEAREST HONOLULU INTERNATIONAL AIRPORT

Parameter/Location	1985	1986	1987	1988
Ozone/Sand Island				
No. of Days of 1-Hr Samples	341	346	342	--
Range of 1-Hr Values ($\mu g/m^3$)	8-198	10-88	4-84	--
Average Maximum 1-Hr Value ($\mu g/m^3$)	43	39	38	--
No. of State AAQS Exceedances	3	0	0	--
Lead/Downtown Honolulu				
No. of 24-Hr Samples	58	57	57	--
Range of 24-Hr Values ($\mu g/m^3$)	0.0-0.3	0.0-0.2	0.0-0.2	--
Average Daily Value ($\mu g/m^3$)	0.2	0.0	0.0	--
No. of State AAQS Exceedances	0	0	0	--

Source: Barry D. Neal & Associates 1990

2.3 Climate and Meteorology

Generally speaking, the climate of the Hawaiian Islands is characterized by a two-season year, mild and warm temperatures (except at the highest elevations), high humidity, and large geographic differences in rainfall. Annual average conditions at HIA are summarized in Table 2-3.

Table 2-3

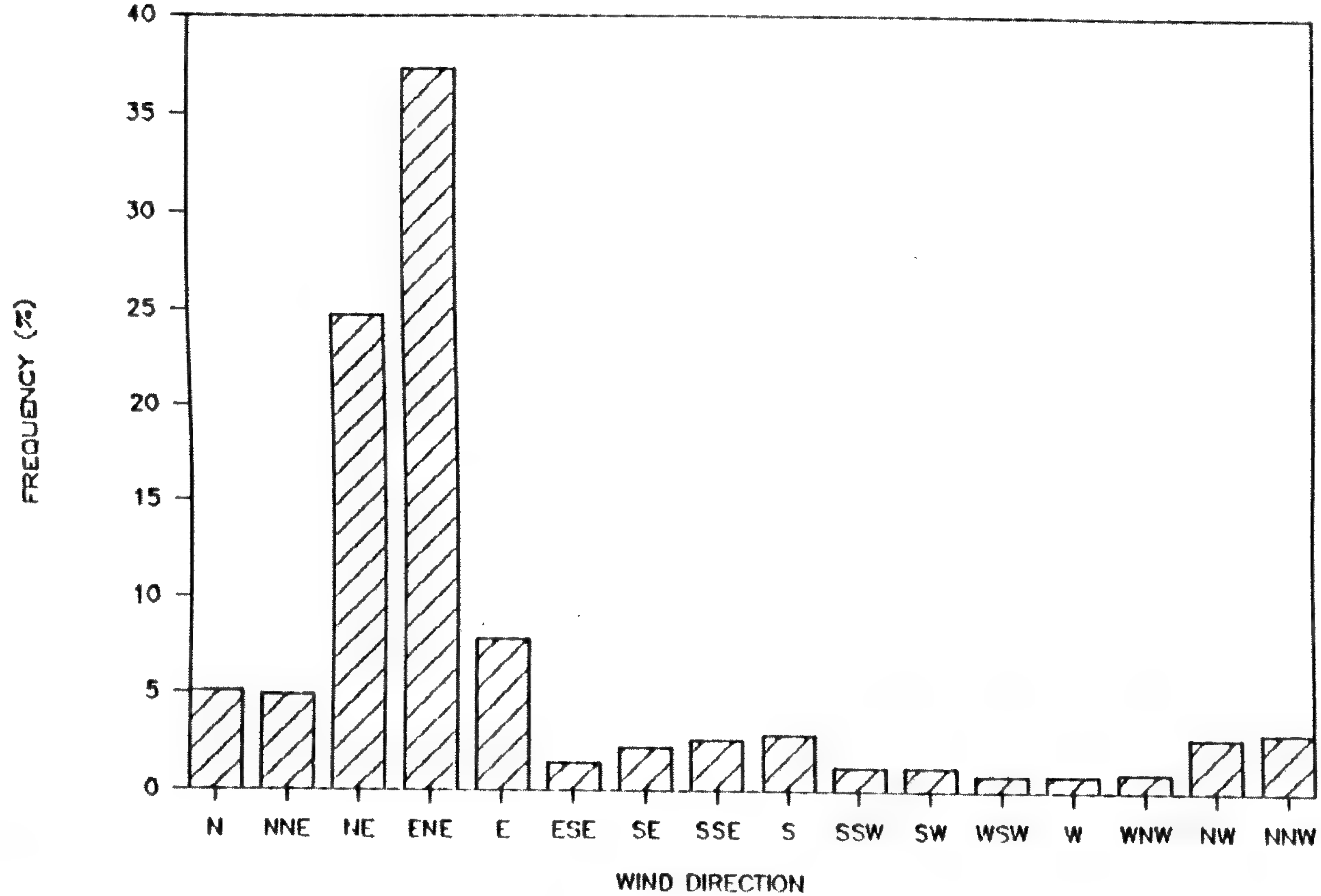
SUMMARY OF AVERAGE METEOROLOGICAL CONDITIONS HONOLULU INTERNATIONAL AIRPORT

	Average Range	Normal
Temperature	69.8 - 83.3°F	76.6°F
Precipitation	0.32 - 4.40 in/mo	22.9 in/yr
Humidity	51 - 81%	56 - 74%
Percent sunshine	59 - 75%	67%
Prevailing wind direction		ENE

Source: *Climate of Hawaii*, 1982

The dominant influence on the wind pattern is the persistent trade-wind (east to west) flow associated with circulation from the Pacific High, generally located northeast of the Islands. During the summer months, the Pacific High is in its northernmost position, resulting in trade winds 80 to 95 percent of the time. The Pacific High shifts southward during October through April, placing Hawaii north of the main belt of trade winds. Nonetheless, the trades are still the primary wind pattern, occurring 50 to 80 percent of the time. The annual distribution of winds at HIA is shown in Figure 2-1.

Superimposed on the trade-wind pattern are several influences that affect both local meteorology and general island climate. Local topography lifts the warm, moist air masses blowing in from the ocean, producing dense clouds and showers, particularly in the mountains and on windward slopes. Diurnal patterns of sea and land breezes are



TAKEN FROM: Air Quality Impact Report Honolulu International Airport, J.R. Morrow, Environmental Management Consultant, November 1987.

ERC Environmental and Energy Services Co.

Annual Wind Rose
Honolulu International Airport

FIGURE 2-1

also affected by terrain. Major storms may occur over the entire chain of islands, usually during October through March when the Pacific High is farthest south.

3. SHORT-TERM POLLUTANT IMPACTS

Short-term pollutant impacts of the planned HIA expansion are considered to be those associated with construction activities. Emission sources primarily include tailpipe emissions from construction equipment and workers' vehicles and fugitive dust generated during demolition and construction activities, particularly site grading.

No information was available on the specific construction equipment to be used; however, the size of the project indicates that a large number of various types of equipment will be utilized. In general, diesel-powered equipment will emit more NO_x, SO_x, and particulate matter per unit of fuel consumption, compared with gasoline-powered equipment. The latter, however, emit more hydrocarbons and CO. According to a letter from Construction Services, Ltd. to the State of Hawaii Department of Transportation Airports Division (1990), 1500 construction workers per day will be required for the International Terminal Building during peak periods. Consequently, localized increases in pollutant concentrations, particularly CO emissions from construction workers' vehicles and equipment, are likely to exist during peak periods.

Fugitive dust generation from grading and heavy construction operations is usually estimated at 1.2 tons per acre per month of activity (USEPA 1985). According to Construction Services, Ltd., the project site will cover approximately 43 acres and 422,000 cubic yards of earth will be excavated over an unknown period of time. The potential for significant fugitive dust generation obviously exists; however, watering and other soil stabilization techniques are routinely employed to substantially reduce the dust generated by construction impacts.

Construction impacts will be localized, transient, and temporary, and can be held below significance levels by employing mitigation measures (see Section 5) as appropriate.

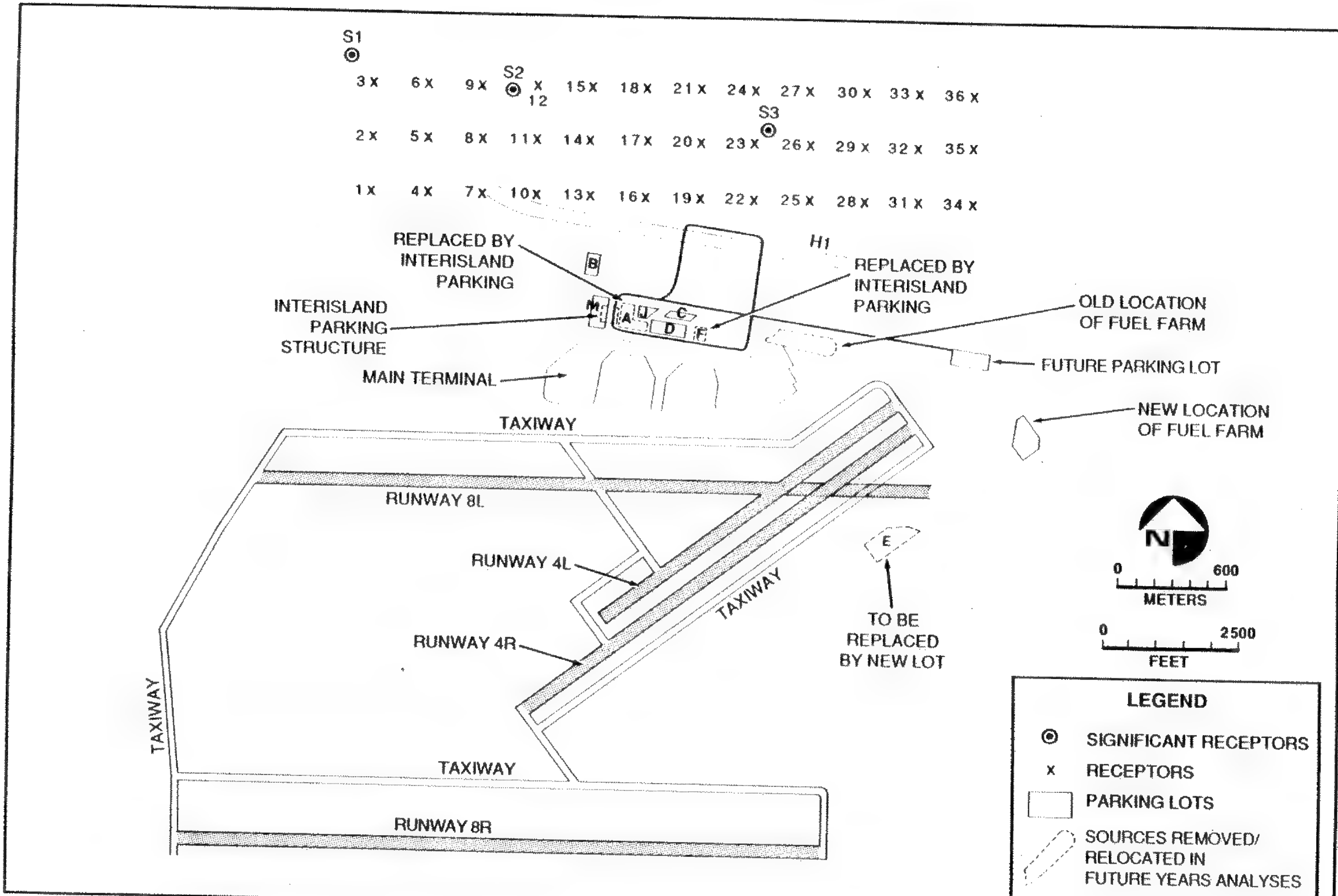
4. LONG-TERM POLLUTANT IMPACTS

Long-term pollutant impacts associated with expansion of the airport include primarily the effects of aircraft emissions, vehicular traffic to and from the airport, and refueling operations. The combined impacts of these sources (shown in Figure 4-1) were predicted for the years 1989, 2000, and 2010 using a new pollution model designed by the FAA specifically for airports. The results of the analysis have been used to determine if any state or federal AAQS will be exceeded and whether mitigation measures will be required (see Section 5). This model and the inputs used in it are described below.

4.1 The Emissions and Dispersion Modeling System

A previous air quality impact study conducted for the HIA (Morrow 1987) utilized the Airport Vicinity Air Pollution (AVAP) model. Prior to beginning this current analysis, the Environmental Protection Agency in Research Triangle Park, NC was contacted for guidance on the best approach for conducting the modeling analysis. Their recommendation was that the Emissions and Dispersion Modeling System (EDMS) be utilized instead of the AVAP model, which is now considered to be out of date. EDMS was subsequently obtained from the Federal Aviation Administration for use in modeling the HIA. While not officially in the public domain at this time, the EPA is currently reviewing EDMS for inclusion on its list of recommended models.

EDMS was designed to replace both AVAP (used for civilian airports) and the Air Force's Air Quality Assessment Model (AQAM). It represents an improvement over both previous models, in that it is less expensive to operate because it is run on a microcomputer rather than a mainframe, and it is menu-driven, simplifying data entry. EDMS is a dispersion model with an emissions front end, and can process line, point, and area sources using as little as one hour or as much as a complete year of meteorological data (Segal, 1988). The emissions portion of the model contains up-to-date data bases for generating emissions from a variety of sources. For example, vehicular emission rates are based on the MOBILE 4 emissions model and can be selected for several different years and for low or high altitude locations. The user inputs such parameters as the number of vehicles, the location of the road segment, and the cold start percentage, and the EDMS model calculates the total emissions. EDMS also contains a data base of aircraft emission factors, primarily taken from AP-42 (USEPA 1985). The dispersion portion of the model is a Gaussian representation that utilizes Pasquill-Gifford dispersion curves. For



ERC Environmental and Energy Services Co.

Schematic View of Honolulu International Airport Expansion - Major Elements (Simplified for Modeling Purposes)

FIGURE 4-1

calculations of roadway emissions, the dispersion curves have been modified to reflect increased turbulence near the roadway.

Pollutant sources simulated by the model for the HIA air quality assessment included aircraft runway operations, vehicular traffic to and from the airport, emissions associated with airport parking lots, and hydrocarbon emissions associated with fueling operations. A discussion of the inputs utilized in the HIA modeling project is provided below. Estimated annual airport emissions for 1989, 2000, and 2010 for each major source category are shown in Table 4-1.

4.2 MODEL INPUTS

4.2.1 Aircraft and Runway Data

The EDMS model requires substantial data on an airport's aircraft operations in order to compute the resulting effects on ambient pollutant concentrations. The most critical parameters are: type of aircraft (i.e., Boeing 747, L1011, etc.); numbers of aircraft operations by type per hour; and location of the runways and taxi queues used (i.e., map coordinate location).

ERCE reviewed selected volumes of the HIA Master Plan Update & Noise Compatibility Program (KFC Airport and E.K. Noda & Assoc. 1989a) to obtain existing and future airport operation data by specific aircraft type. The 1987 aircraft operation data identified in the Master Plan were updated to reflect new information compiled by Aries Consultants, Ltd. (1990a and 1990b). Because the 1990b data had not been broken down by specific aircraft type, as required by the EDMS model, ERCE developed a method to apportion total aircraft data to specific types. This method consisted of calculating the percent of total aircraft operations represented by each aircraft type in Aries (1990a), and then applying this same ratio to the totals given in Aries 1990b. Since no specific breakdown for military aircraft was provided in either of the Aries reports, military aircraft operations by type were obtained by scaling the type-specific data in the Master Plan to the total military aircraft operations reported in Aries (1990b). Prior to finalization of the analyses, the 1989 aircraft data were updated (Aries 1990c), and the latest values were utilized as model inputs.

The next step was to calculate peak hourly aircraft operations from the annual operations listed in Table 4-2. Data provided in the Master Plan indicated that the aircraft operations at

Table 4-1

EMISSIONS FROM EXPANDED HONOLULU AIRPORT
(Tons/Year)

Pollutant	Year	Traffic and Parking	Fuel Ops./ Storage	Aircraft Ops.	Total
Carbon Monoxide	1989	1097	0	5592	6689
	2000	608	0	6564	7172
	2010	643	0	7610	8253
Hydrocarbons	1989	93	103	2392	2588
	2000	59	133	2574	2766
	2010	65	145	2931	3141
Nitrogen Oxides	1989	159	0	1806	1965
	2000	96	0	2235	2331
	2010	104	0	2636	2740
Sulfur Oxides	1989	0.13	0	185	185
	2000	0.16	0	222	222
	2010	0.17	0	251	251
Particulate	1989	0.88	0	387	388
	2000	1.03	0	415	416
	2010	1.17	0	435	436

Table 4-2

ANNUAL AIRCRAFT OPERATIONS

Air Carriers	1989	2000	2010
B747	24272	32700	45200
DC-10-30	40015	49300	62200
B767/B757	112	2900	4400
DC-8-70/B707	4186	0	0
B727	743	0	0
B-737/MD-80/DC-9	102793	112400	102800
BAE146	6	33700	29400
DHC-7/DHC-8	22220	28000	34000
DHC-6/C-402/PA-31	52121	58000	59000
C-208/C-206	12227	18000	24000
BUSJETS	908	1300	2000
GA 2-engine	19150	21700	24000
GA 1-engine	69423	92000	104000
C-130	5498	5541	5541
KC-135	24863	25056	25056
F-4	12682	12781	12781
P-3	1276	1286	1286
KC10	334	337	337
Helicopters	10806	20000	30000
Total	403635	515000	566000

the HIA are not distributed evenly throughout the day nor throughout the year. The runway demand/capacity graph indicates that the hour 11 a.m. to 12 noon is the peak hour (KFC Airport and E.K. Noda & Assoc. 1989b). Data from this graph were used to establish the diurnal profile (i.e., the percent of daily aircraft operations per hour). Likewise, the monthly profile was determined from the monthly aircraft movements, which are provided graphically in the HIA Traffic and Parking Study (Barton-Aschman Associates 1990). The daily distribution of operations for August 1989 was also obtained from the Airport Traffic Record.

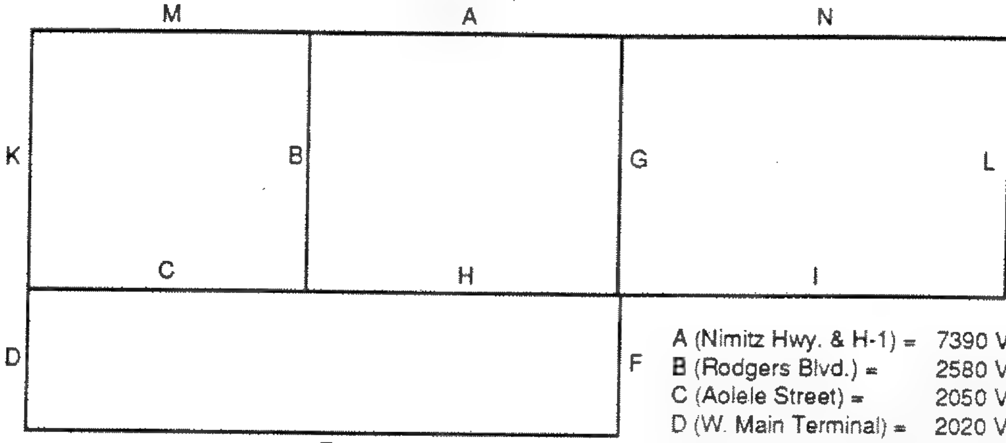
Maximum hourly aircraft operations were calculated as follows. The revised annual aircraft operations provided in Table 4-2 were multiplied by the highest monthly percentage (in this case, August). This value (the maximum number of aircraft operations/month) was multiplied by the highest daily percentage (which occurred on Monday) as an estimate of the maximum operations/day. The daily maximum was, in turn, multiplied by the highest hourly fraction from the diurnal profile (i.e., the value for 11 a.m. to 12 noon). Maximum 1-hour aircraft operations were calculated for each aircraft type (i.e., B747, B727, etc.) for 1989, 2000, and 2010. Because the EDMS model input menu links each aircraft type with runway and queue location, the hourly aircraft data were then apportioned to runways using the flight track data contained in the Master Plan. No helicopter traffic was included in the modeling analyses because the EDMS model does not handle this type of aircraft. This omission is not significant as helicopter traffic comprises less than 1 percent of the emissions for any pollutant.

Emissions data for over 30 different aircraft types operating in 8 different modes (i.e., queuing, taking off, etc.) are contained within the model's data base and are accessed automatically once the user has specified the aircraft mix for each runway.

4.2.2 Roadways

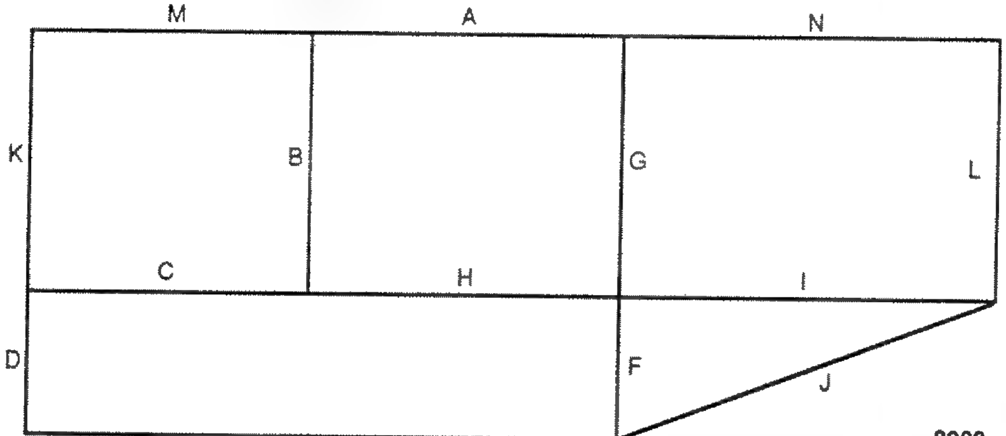
Inputs required to model vehicular traffic included coordinates of individual roadway segments and the number of vehicles per hour for each segment. In order to determine the impacts of traffic to and from HIA, traffic data were obtained from the Barton-Aschman Associates, Inc. (1990) and Wilbur Smith Associates (1990) reports. Because there are many ramps and surface streets leading into and from the main terminal building, it was necessary to develop a simplified schematic of the roadways for modeling purposes.

Existing Traffic Counts



A (Nimitz Hwy. & H-1) =	7390 VPH
B (Rodgers Blvd.) =	2580 VPH
C (Aolele Street) =	2050 VPH
D (W. Main Terminal) =	2020 VPH
E (S. Main Terminal) =	2020 VPH
F (E. Main Terminal) =	2020 VPH
G (Paiea Street) =	3010 VPH
H (Aolele Street) =	1100 VPH
I (Aolele Street) =	1120 VPH
K (Interisland Term.) =	460 VPH
L (Lagoon Dr.) =	6770 VPH
M (Nimitz Hwy. & H-1) =	2300 VPH
N (Nimitz Hwy. & H-1) =	8780 VPH

Years 2000 and 2010 Predicted Traffic Counts



	2000	2010
A (Nimitz Hwy. & H-1) =	8543	9592
B (Rodgers Blvd.) =	3119	3609
C (Aolele Street) =	2870	3617
D (W. Main Terminal) =	2791	3492
E (S. Main Terminal) =	2590	3109
F (E. Main Terminal) =	1959	1891
G (Paiea Street) =	3040	3065
H (Aolele Street) =	891	697
I (Aolele Street) =	1201	1781
J (Unidentified) =	1549	1781
K (Interisland Term.) =	561	653
L (Lagoon Dr.) =	2813	3280
M (Nimitz Hwy & H-1) =	6228	6421
N (Nimitz Hwy & H-1) =	8819	8856

ERC Environmental and Energy Services Co.

Schematic of Major Honolulu International Airport Roadways

FIGURE 4-2

Figure 4-2 depicts the segments and traffic data used for this analysis. The traffic data are sums of all traffic on a given roadway segment, regardless of direction of travel.

Vehicular emissions data are automatically calculated by the EDMS model using EPA's MOBILE 4 emission factors. The user has the option of entering the year for which calculations are to be made (1990, 1995, 2000, or 2010), and whether or not high altitude emission factors should be used. A standard mix of eight vehicle types is assumed. For the HIA project, vehicle years 1990, 2000, and 2010 and low altitude emission factors were selected.

The EDMS is also capable of modeling queued vehicles (such as those located outside baggage claim areas) as a separate source. However, no information was identified to define the input data for this part of the model, and so vehicle queues were not modeled. It should be noted that these sources can cause high, localized CO concentrations during peak traffic conditions.

4.2.3 Parking Lots

Data related to the locations and capacities of the HIA parking lots were obtained from Barton-Aschman Associates, Inc. (1989). As shown in Figure 4-1, Lots A and F are scheduled to be replaced by the new Interisland Parking Structure (Lot M). Consequently, Lots A and F were included in the 1989 analysis, while Lot M was part of the 2000 and 2010 analyses. Similarly, parking Lot E was included in the 1989 analysis, but not in the future year predictions. For years 2000 and 2010, it was assumed that the proposed lot at Lagoon and Aolele would replace Lot E.

4.2.4 Tank Farms

Details of the storage and transfer of fuel at HIA were provided by Lockheed Air Terminal Co. Emission points modeled included the existing tank farm (1989), the proposed replacement tank farm east of the existing facility (2000,2010), and the ramp tanks (all years). The tank farm is equipped with floating roof tanks and 90 percent vapor recovery. Annual throughput is 70 million gallons. The proposed new tank farm was assumed to be similarly equipped with vapor recovery. The annual throughput was assumed to be proportional to the increased air traffic expected to occur between 1989 and each of the future years modeled.

The fuel stored at the tank farm is pipelined to over 100 locations at the ramps on the Diamondhead, Ewa, and Interisland Terminal concourses. The tanks on the ramps are fixed-roof type, with no vapor recovery. The pumping operations from the ramp tanks into the aircraft also are uncontrolled by vapor recovery.

Because of the large number of vapor emission points, the existing and replacement tank farms were modeled as single sources. One point at each of the three concourses was used to represent the ramp tanks and aircraft loading operations.

4.2.5 Meteorological Data

The wind pattern at HIA has an important effect on the locations of pollutant impacts. As described in Section 2, the predominant wind pattern is from the northeast much of the year. This pattern would transport pollutants from Honolulu toward the airport area and out to the ocean. The wind regime which would be most likely to cause pollutant impacts from airport sources at onshore receptors would be southerly winds (called Kona winds). Accordingly, the impact modeling analysis focused on periods with southerly winds in order to provide worst-case predictions. The hourly wind observations at HIA during 1989 were examined to locate the longest period of persistent southerly winds. One day with 10 consecutive hours from this direction was identified, and meterological conditions from this day were used as inputs in the model to obtain maximum multiple hour pollutant averages for comparison with 1, 3, 8 and 24-hour ambient standards. Because of the extremely long run time required by the EDMS to calculate annual averages from an annual hourly data set, annual pollutant concentrations were conservatively obtained by scaling 1-hour predicted concentrations. In order to obtain conservative estimates of HIA impacts on annual pollutant levels for comparisons with annual standards, the following calculation was made:

(a) The modeled worst-case hourly concentration was assumed to occur at at least one downwind receptor for every hour of the year during which the wind direction was within a 45 degree sector centered on the worst-case direction (190°). A sequential meteorological HIA data base for 1989 was used to determine the number of such hours.

(b) Airport sources were assumed to have no impact at the modeled receptors for all other hours of the year.

(c) Annual average concentrations were determined as the weighted average of (a) and (b) hours over the entire year.

The result of the above calculations was a scaling factor of 0.0489 which was multiplied by the 1-hour average NO_x, PM, and SO_2 concentrations to obtain annual averages of these pollutants.

4.2.6 Receptors

Model receptors were chosen at 1000 foot intervals along 3 hypothetical east-west lines about 1000 feet, 2000 feet and 3000 feet north of the Nimitz Freeway (see Figure 4-1). Three additional receptors were included to provide pollutant concentrations predictions at the locations identified as sensitive receptors in the 1987 impact analysis (J.W. Morrow 1987). These three receptors were Pearl Harbor Kai School, Pearl Harbor School, and Aliamanu School.

4.3 RESULTS OF MODELING

Table 4-3 shows predicted pollutant concentrations obtained from the EDMS simulations described in previous sections. This table summarizes the modeling results for future years, as well as current conditions (1989). Note that tabulated concentrations represent total values, i.e., the sums of model-predicted concentrations and "background" levels that have been assumed on the basis of available monitoring data. The concentrations used as background levels for each pollutant are listed at the bottom of the table. It is worth noting that the lack of site-specific pollutant measurements in the HIA vicinity is a serious source of uncertainty in this analysis, which is addressed further in the discussion of mitigation measures in Section 5.

Predicted SO_2, NO_2 and TSP concentrations are well below allowable standards, and the contribution of airport sources to the totals for these pollutants is relatively small. Because the federal annual and 24-hour PM-10 standards are very similar to the state TSP standards, it is expected that PM-10 concentrations will also be below federal standards. Expansion of the airport is projected to produce small SO_2, NO_2, and particulate increases.

Table 4-3

PREDICTED IMPACTS FROM EXPANDED HONOLULU AIRPORT

Pollutant	Average Time	Standards State	Standards Federal	1989	2000	2010
Carbon Monoxide	1 Hour	10 mg/m^3	40 mg/m^3	7.9	8.3	8.9
	8 Hours	5 mg/m^3	10 mg/m^3	4.6	4.6	4.7
Nitrogen Dioxide	Annual	70 $\mu g/m^3$	100 $\mu g/m^3$	51	54	57
Sulfur Dioxide	3 Hours	1300 $\mu g/m^3$	1300 $\mu g/m^3$	132	136	139
	24 Hours	365 $\mu g/m^3$	365 $\mu g/m^3$	51	52	52
	Annual	80 $\mu g/m^3$	80 $\mu g/m^3$	15	15	16
Particulate Matter	24 Hours	150 $\mu g/m^3$	--	69	69	70
	Annual	60 $\mu g/m^3$	--	22	22	23
Hydrocarbons	1 Hour	--	--	1106	1198	1398
		--	--			

Background concentrations have been added to the above values as follows:

CO (1-Hour) = 5 (one-half the average maximum concentration observed in downtown Honolulu. This value is considered to be conservatively high for the case of southerly winds modeled in this study).
CO (8-Hour) = 4 (0.7 times assumed 1-hour CO background)
NO_2 (Annual = 29 (maximum from 1971-1976 Barbers Point study)
SO_2 (3-Hour) = 108 (scaled by multiplying 24-hour maximum concentration by 2.25)
SO_2 (24-Hour) = 48 (maximum concentration from 1985-1988)
SO_2 (Annual) = 12 (scaled by multiplying 24-hour maximum concentration by .25)
Particulate matter (24-Hour) = 61 (maximum concentration from 1985-1988)
Particulate matter (Annual) = 15 (scaled by multiplying 24-hour maximum concentration by .25)

Carbon monoxide concentrations for both 1-hour and 8-hour averaging times are predicted to be below the state and federal standards in all analysis years. However, the results are based on an assumption of 5 mg/m^3 1-hour average background CO concentration and 4 mg/m^3 background for the 8-hour average. Although these numbers seem reasonably conservative as area-wide background values appropriate for the receptor grid utilized in the model, and southerly onshore wind conditions, it is possible that CO concentrations are higher in areas of congested traffic (CO "hotspots"). The HIA traffic analysis conducted by Wilbur Smith Associates (1990) indicated that the intersection with the worst level of service rating in year 2010 would be Lagoon Drive and Nimitz Highway. An air quality impact modeling study conducted for the Ke'ehi Lagoon Recreation Plan (Root, 1989) evaluated CO concentrations at this intersection, as well as at several other nearby intersections. The results of this analysis indicated that exceedances of both state CO standards are probably occurring presently and will continue to occur in future years. Therefore, the possibility of current violations of the CO standard in the airport area appears likely, but can neither be confirmed nor denied because of the lack of monitoring data.

No photochemical modeling to predict the impact of expanded airport operations on ozone concentrations was conducted. However, NO_2 and hydrocarbon emissions (which are precursors to ozone formation) are expected to increase over the next 20 years. Since exceedances of the state ozone standard have been recorded in the past, it would be reasonable to assume that airport emissions now and in future years contribute to additional violations. However, as noted in Section 4.2.5, the prevailing winds at HIA will transport these emissions seaward approximately 90 percent of the time, rather than toward populated areas.

Table 4-4 presents the maximum predicted concentrations (including background) at the three special receptor locations (described in Section 4.2.6). No exceedances of any state or federal standards are expected at these locations. However, as described above, the lack of CO monitoring data in the general area introduces significant uncertainty in the assumed background concentrations that were added to the predicted airport impact values.

Table 4-4

PREDICTED IMPACTS FROM EXPANDED HONOLULU AIRPORT AT SELECTED RECEPTORS[a]

Pollutant	Year	Average Time	Receptor S1 Pearl Harbor Kai School	Receptor S2 Pearl Harbor School	Receptor S3 Aliamanu School
Carbon Monoxide[b]	1989	1 Hour	5.0	5.0	5.3
	2000		5.0	5.0	5.0
	2010		5.0	5.0	5.0
	1989	8 Hours	4.0	4.0	4.1
	2000		4.0	4.0	4.0
	2010		4.0	4.0	4.0
Nitrogen Dioxide	1989	Annual	30	29	33
	2000		30	29	33
	2010		30	30	33
Sulfur Dioxide	1989	3 Hours	109	108	110
	2000		109	108	110
	2010		109	108	111
	1989	24 Hours	48	48	49
	2000		48	48	49
	2010		49	48	49
	1989	Annual	12	12	12
	2000		12	12	12
	2010		12	12	12
Particulate Matter	1989	24 Hours	61	61	62
	2000		61	61	62
	2010		61	61	62
	1989	Annual	15	15	15
	2000		15	15	15
	2010		15	15	15

[a]Background concentrations have been added to the above values as indicated in Table 4-3.
[b]Units of CO concentration are mg/m^3. All others are $\mu g/m^3$.

4.4 Comparison of Results with Previous Study

As mentioned in Section 4.1, a previous modeling study for the HIA expansion was conducted in 1987 (Morrow 1987). The results from this study are not strictly comparable with the analysis results reported herein for the following reasons:

- Different years were analyzed. Morrow reports predicted impacts for 1985, 1990, and 2005. This study estimated impacts for 1989, 2000, and 2010.

- The number of average daily aircraft used by Morrow (and presumably the number of aircraft assumed in a worst-case hour and on an annual basis) was approximately 17 percent lower than the current estimates used in this analysis.

- The AVAP model was used for the 1987 analysis; the EDMS model was used for the most recent analysis. The AVAP model was developed in the early 1970's and was never validated or updated in the last 10 years (Segal 1990). In fact, the impetus for developing EDMS was that researchers had found the AVAP results did not agree with other calculational techniques. Rather than modify AVAP, it was decided that an easier-to-use technique, incorporating AVAP and AQAM would be developed, with the final result being EDMS. The AVAP model has not been recommended by the FAA for use in the last several years; EDMS is the model now recommended by both the FAA and EPA.

- Vehicular emission factors contained in AVAP have been updated in EDMS. For example, the 1987 modeling analysis used MOBILE 3, while EDMS uses MOBILE 4.

- Background concentrations assumed in the modeling analysis were, in some cases, significantly different. As discussed previously, the lack of monitoring data in the HIA airport has made the selection of background concentrations very subjective.

Because of the differences described above, a direct comparison of the two analysis is difficult. However, in general, the results from the two studies agree fairly well. Total emissions for Morrow's model year 2005 range between 2 percent higher (NO_x) and 45 percent lower (PM) than those in our model year 2000, with most of the predicted

emissions being higher in this most recent study. Similarly, predicted impacts (no background considered) tend to be somewhat higher in this study compared to the 1987 results.

Given all the differences in the two analysis, it should be stated that the basic conclusions of both studies are essentially the same. Both reports conclude that airport sources are a significant contributor to pollutant loading in the area and that these emissions will increase in future years. Both studies conclude that, in general, ambient concentrations are not expected to exceed federal or state standards, except for possible local exceedances of the CO standards near areas of heavy traffic. Finally, both studies conclude that emissions of ozone precursors must be reduced to minimize exceedances of the ozone standard.

5. CONCLUSIONS AND RECOMMENDED MITIGATION MEASURES

The results of the air quality impact modeling analysis described in the previous section indicated that, for the most part, no significant adverse air quality impacts are expected from the expansion of HIA. The one exception to this is the potential for exceedances of the state CO standards. As mentioned previously, no monitoring data exist that would define the existing CO background, and model results could be changed substantially to be either above or further below the standard, depending on the actual background. The only way to determine the background CO concentration is by measuring it at a location that would be representative of the impacts of airport sources (i.e. a location north of the airport near significant receptors). Such a monitoring study would determine whether mitigation of CO impacts is necessary, and, if so, what specific mitigation strategies should be required to assure compliance with the standards. Therefore, the recommendation of this study is that such an ambient air quality monitoring study be conducted, and that the modeling results be re-evaluated in light of actual background concentrations. The fact that CO concentrations in excess of state standards are recorded where a monitoring station is located, i.e., in downtown Honolulu, gives credence to the concern that exceedances north of the airport may also occur on occasion.

In addition to the potential for exceedances of the state CO standard, the state O_3 standard has also been exceeded in past years, and this situation is likely to be exacerbated by future growth throughout the island. Since the HIA expansion involves increased emissions of O_3 precursor emissions (reactive hydrocarbons, oxides of nitrogen), the expansion can be expected to contribute to increasing O_3 levels in future years.

Because the HIA represents a significant source of pollutant emissions, efforts should be made to minimize emissions as much as possible. The following discussions summarize recommended mitigation measures that should be applied as practicable.

5.1 CONSTRUCTION PHASE MITIGATION MEASURES

Construction impacts are expected to be temporary and confined to localized areas. However, vehicular emissions from workers' cars and construction equipment are expected to contribute to degradation of air quality in the area. Mitigation measures intended to minimize construction impacts from these sources, as well as from grading operations that will produce dust impacts, include the following:

- Minimize the number of concurrent construction/grading or equipment-intensive projects at any given time
- Minimize simultaneous operation of multiple fuel burning construction equipment units
- Utilize electrical construction equipment (e.g., welders) where possible
- Use catalytic reduction for gasoline-powered equipment
- Apply injection timing retard to diesel-powered equipment
- Water construction areas to minimize fugitive dust

5.2 Operational Phase Mitigation Measures

As shown in Section 4.3, potentially adverse impacts are expected to result from pollutant emissions associated with the expansion of HIA. In particular, exceedances of the CO ambient air quality standards have been predicted near the airport by other modeling studies. In addition to CO impacts, the HIA is a source of other air contaminants that figure prominently in the production of ozone. Accordingly, it is recommended that as many of the following mitigation measures as possible be evaluated and implemented.

5.2.1 Traffic Mitigation Measures

Implementation of the measures listed below will aid in reducing pollutant emissions associated with the large numbers of vehicles traveling to and from the airport.

- Encourage ride-sharing or use of public transportation by employees
- Limit the number of passenger parking spaces to promote the use of shuttle services and public transportation
- Discourage idling vehicles at dropoff points.
- Implement traffic improvement measures such as traffic flow improvements (i.e., proper signalization, road widening) for intersections with poor Level of Service ratings.

5.2.2 Aircraft Operations Mitigation Measures

As indicated in Table 4-1, aircraft operations emit the largest proportion of all airport air pollutants. One obvious way to reduce air pollutants from aircraft is to encourage the

airlines to use airplanes with more efficient engines. Such a requirement, while difficult to implement, is possible. Another way to minimize emissions would be to spread operations throughout the day so that fewer aircraft take off in the peak hour. However, the available data indicate that HIA is utilized at a fairly high rate throughout the daylight hours, so it is unlikely that schedule shifting will create a significant decrease in maximum emissions. The third principal method of reducing aircraft emissions would be to reduce total aircraft operations. This could be accomplished by requiring that commercial aircraft have a minimum occupancy (70 percent, for example) or setting a minimum passenger carrying capacity for planes using the facility.

While the implementation of the methods described above may be difficult, to achieve as policy, the use of more efficient engines and achieving higher occupancy rates may become practical for reasons other than those related to air quality. If the price of oil remains high, economic considerations may force implementation of these measures, resulting in an incidental air quality benefit.

REFERENCES

Aries Consultants, Ltd 1990a. Table 1 (5/16/90) from Statewide Airport System Plan (preparation in progress).

Aries Consultants, Ltd 1990b. Table I-4 6/12/90 (no reference provided).

Aries Consultants, Ltd. 1990c. Table 1 (8/7/90) (no reference provided).

Barry D. Neal & Associates, 1990. Air Quality Study for the Proposed Automated People Mover Project at Honolulu International Airport. April 1990.

Barton-Aschman Associates, Inc., 1990. Traffic and Parking Study for Honolulu International Airport. April 1990.

Construction Services, Ltd., 1990. Letter from Jack G. Mathews to Jim Cox, Project Manager, State of Hawaii Department of Transportation Airports Division, Honolulu International Airport. April 16, 1990.

KFC Airport, Inc. and Edward K. Noda and Associates, 1989(a). Honolulu International Airport Master plan Update & Noise Compatibility Program. Volume 2 Part I. December 1989.

KFC Airport, Inc. and Edward K. Noda and Associates, 1989(b). Honolulu International Airport Master Plan Update & Noise Compatibility Program. Volume 2 Part II. Appendix G. December 1989.

Morrow, J. W., 1987. Air Quality Impact Report Honolulu International Airport. November, 1987.

National Oceanic and Atmospheric Administration, 1982. Climate of Hawaii, Climatography of the United States No.60. June 1982.

Root, Barry D. and Barry D. Neal 1989. Air Quality Study for the Ke'ehi Lagoon Recreation Plan. September 1989.

Segal, H.M., 1988. A Microcomputer Pollution Model for Civilian Airports and Air Force Bases User's Guide-Issue 2. August 1988.

Segal, H.M., 1990. Personal communication.

USEPA, 1985. Compilation of Air Pollution Emission Factors, AP-42, Fourth Edition. September 1985.

Wilbur Smith Associates, 1990. Honolulu International Airport Master Plan Traffic Analysis, Preliminary Draft Report. May 25, 1990.

APPENDIX B

HONOLULU INTERNATIONAL AIRPORT
UTILITIES EVALUATION

ADDENDUM

HONOLULU INTERNATIONAL AIRPORT

UTILITIES EVALUATION

- Page 5

  Revise last paragraph, first sentence to read, "Electricity: To meet increase power demand to serve the HIA expansion in progress, HECO is planning to install a new 138kV switching station in the vicinity between Kamehameha Highway and the Navy-Marine Golf Course and a new 138 kV substation at Rodgers Boulevard with a 138 kV underground transmission line connecting the two stations. The new 138kV substation at Rodgers Bouelvard will service....etc."

- Page 30

  Add a new sentence on second paragraph after the third sentence to read, "A new HECO 138kV substation at Rodgers Boulevard will be fed by a new HECO 138kV switching station that will be constructed in the vicinity between Kamehameha Highway and the Navy-Marine Golf Course. A new HECO distribution substation will be....etc."

HONOLULU INTERNATIONAL
AIRPORT
UTILITIES EVALUATION

HONOLULU INTERNATIONAL AIRPORT

UTILITIES EVALUATION

Prepared for:

Edward K. Noda & Associates, Inc.

615 Piikoi Street, Suite 1000

Honolulu, Hawaii 96814

Prepared By

Wilson Okamoto & Associates, Inc.

1150 South King Street, Suite 800

Honolulu, Hawaii 96814

September 1990

Table of Contents

List of Figures

HONOLULU INTERNATIONAL AIRPORT

UTILITIES EVALUATION

EXECUTIVE SUMMARY AND RECOMMENDATION

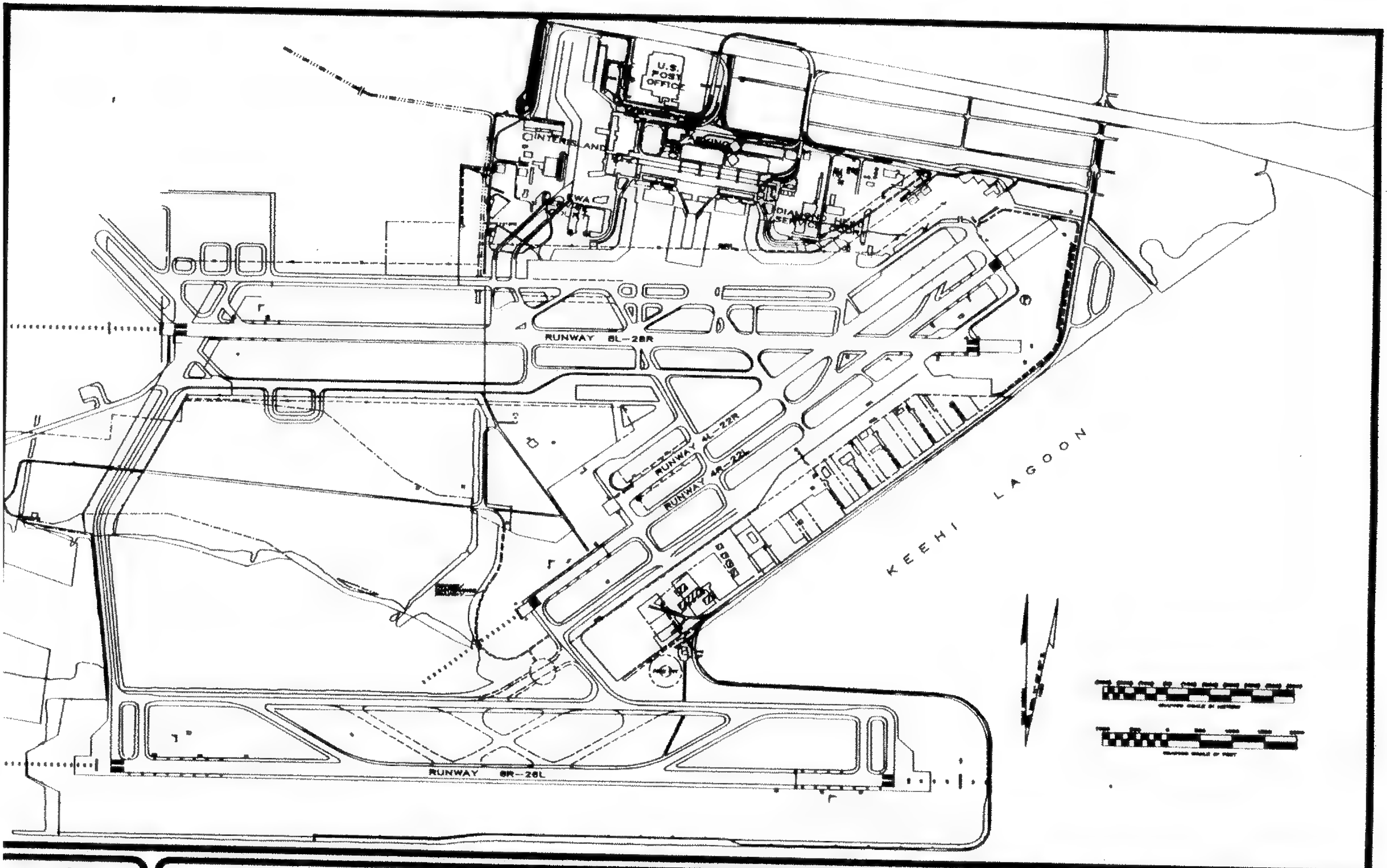
This report is prepared for Edward K. Noda and Associates and considers adequacy of existing utilities to support the projected growth at the Honolulu International Airport through the year 2010. Major improvements planned and/or initiated include the following:

- New Interisland Facilities
- New International Terminal Building
- Expansion of the South Ramp Facilities
- Expansion of the Overseas Terminal
- New Base Maintenance Facility
- New Intra-Airport Transportation System
- Relocation of the North Ramp Commuter Airline Facilities
- Relocation of the North Ramp Aircraft Rescue and Fire Fighting Station

Of the utilities analyzed, only the water system is adequate for the projected period. Sewer, drainage, gas, electric, aviation fuel, and telephone services will have to be expanded.

Our findings are summarized as follows:

Water: Current water consumption for the Honolulu International Airport (HIA) is approximately 1.8 million gallons per day (MGD). The projected consumption for the design year 2010 is 2.74 MGD. No difficulty is

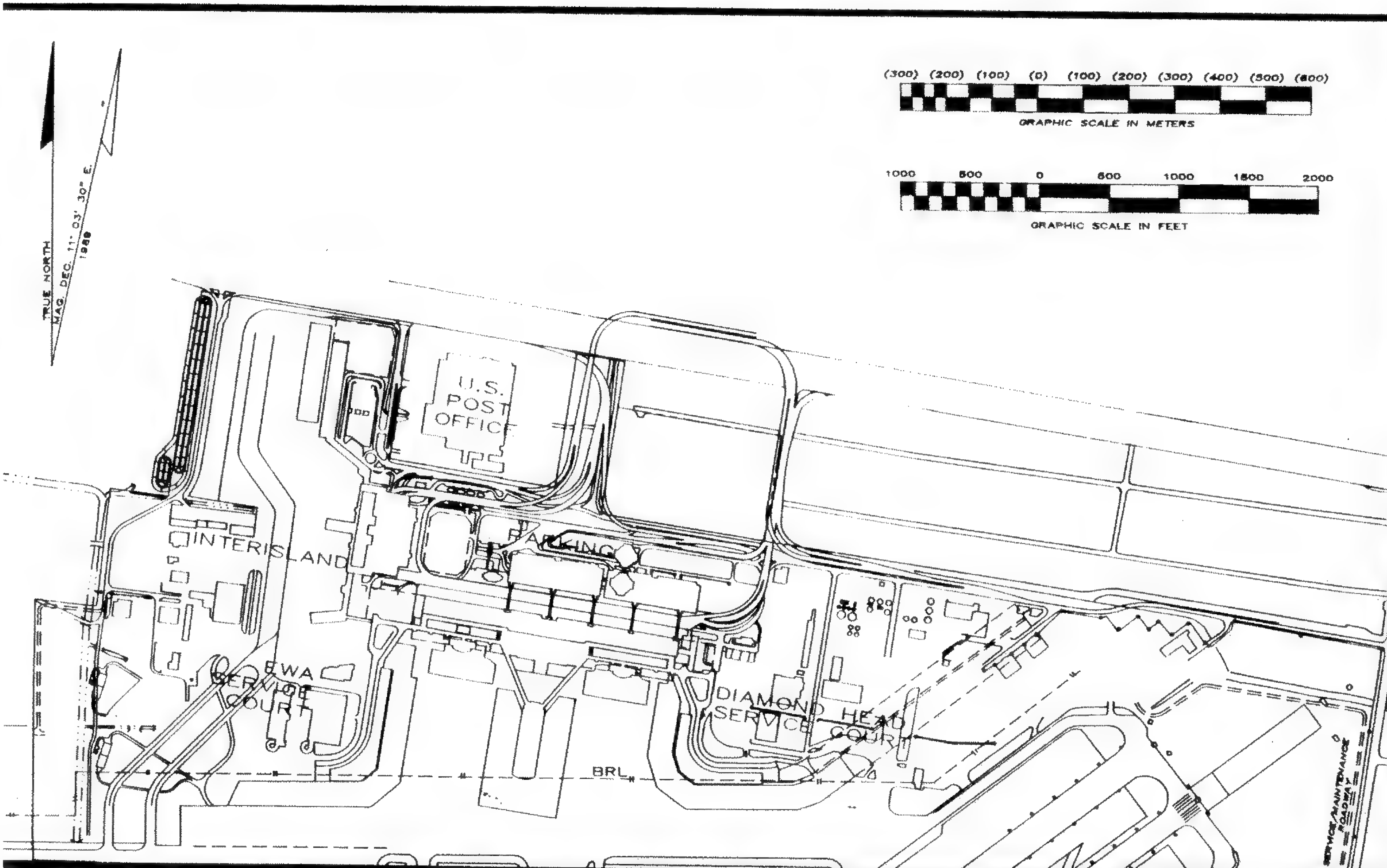


WILSON OKAMOTO & ASSOCIATES, INC.

HONOLULU INTERNATIONAL AIRPORT SITE PLAN

H.I.A.

FIGURE 1

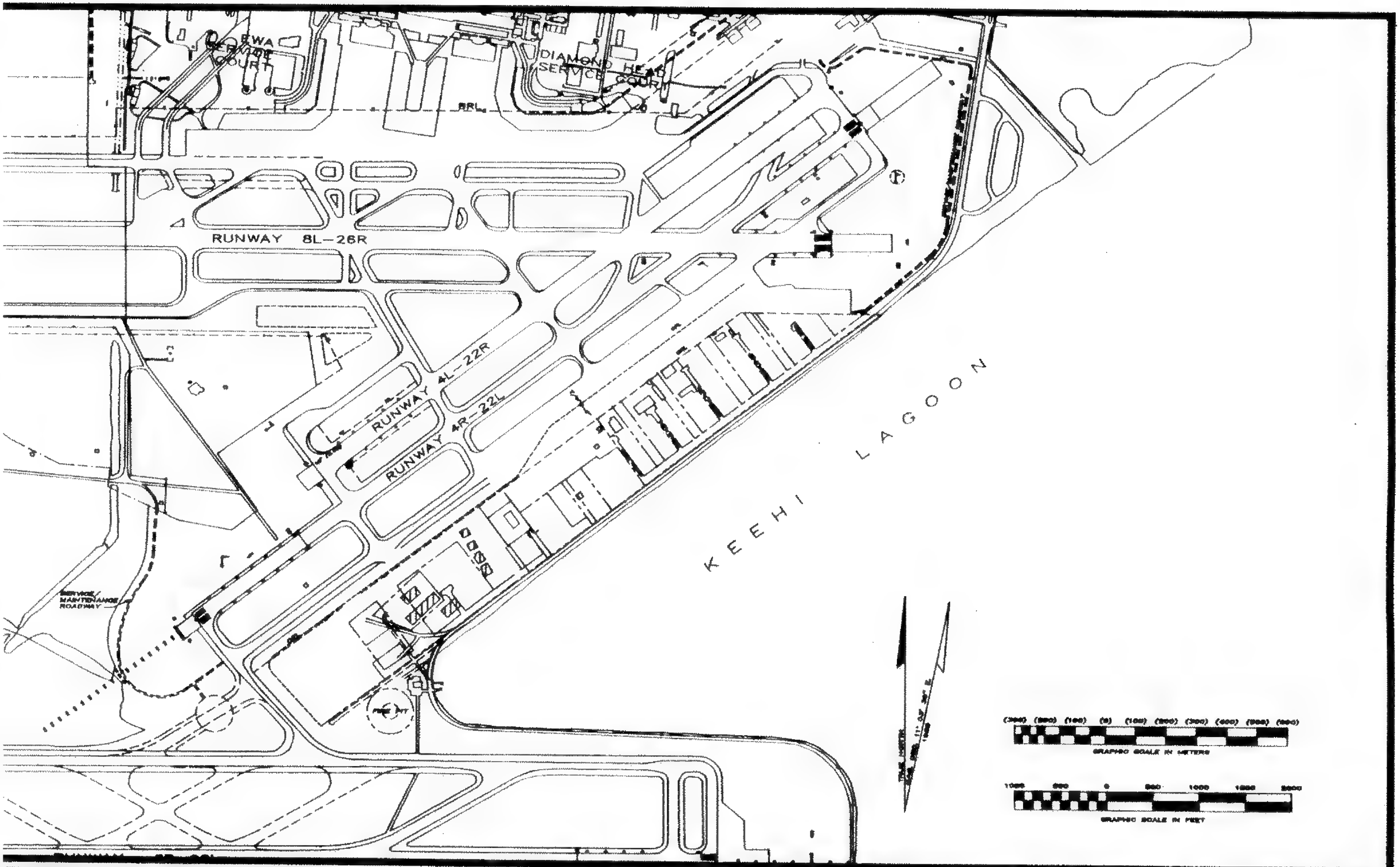


WILSON OKAMOTO & ASSOCIATES, INC.

HONOLULU INTERNATIONAL AIRPORT SITE PLAN

NORTH RAMP

FIGURE 2



WILSON OKAMOTO & ASSOCIATES, INC.

HONOLULU INTERNATIONAL AIRPORT SITE PLAN

SOUTH RAMP

FIGURE 3

anticipated in supplying the water for this projected demand. Use of non-potable water for irrigation scheduled to begin in 1991 will result in an appreciable reduction in the consumption of potable water.

The water main constructed in recent years and planned system upgrading scheduled together with expansion of HIA will provide the basic infrastructure for the design year.

Sanitary Sewer: The projected flows from HIA together with flows from the surrounding area (excluding Ke'ehi Lagoon development) will fully utilize the capacity of local (Aolele Street) existing facilities. Downstream sewer interceptors are already at capacity. Inclusion of flow from the proposed Ke'ehi Lagoon developments will exceed available capacity. Also, the pumping station at the Kalewa Street industrial area does not have sufficient capacity to accommodate full development of its service area. Plans for full development of the Kalewa Street industrial area must include improvements to the pumping station. As the passenger projections for the year 2010 are approached, flow in the Aolele Street 42-inch collector sewer should be re-evaluated since the analysis indicates that near capacity flows will be carried by the sewer line.

Electricity: To meet increased power demand to serve the HIA expansion now in progress, two new HECO substations are planned. A new substation at Rodgers Boulevard will service the new International Terminal Building, the new automated people mover, and expansion of the Overseas

and Interisland Terminals. Existing duct capacity to serve the Interisland and International Terminals will also be increased. Another new HECO substation will be constructed on Lagoon Drive in the Kalewa Street industrial area to serve the expansion of South Ramp facilities. With completion of the Lagoon Drive, Phase III project in 1991, there will be sufficient ducts to provide for the electrical power requirements of planned developments in South Ramp.

Telephone: Major upgrading of the telephone system is scheduled. A new telephone central office to be located at Paiea Street or the new International Terminal Building together with 800 new lines and 4 new conduits are scheduled to meet the needs of the new International Terminal Building and the expansion of the Overseas Terminal and Interisland Facilities. Hawaiian Telephone Company is also considering renovating the existing Main Telephone Equipment Room located at the Main Terminal Building to increase the capability to service state-of-the-art communication equipment such as computerized airplane reservations. For the South Ramp developments, a new 900-line cable will be installed on Lagoon Drive in 1991. HTCO is considering installation of a remote switching unit for South Ramp. While there are sufficient ducts for telephone communications, additional ducts will be required for future security control facilities.

Aviation Fuel: The critical elements of the aviation fuel systems are the transmission facilities to the HIA storage complex, storage capacity

at the complex, and pumps which supply bonded fuel from the storage complex to the aircraft parking gates.

Increasing air cargo activities are anticipated for South Ramp however, no fuel lines service the area. A feasibility study for an alternative aviation fuel system for South Ramp should be considered together with the development of South Ramp.

Synthetic Natural Gas: Synthetic natural gas facilities appear adequate for North Ramp. However, there are no gas lines to service the flight kitchens scheduled for construction in South Ramp. Individual gas tanks will be required for South Ramp customers until projected revenues exceed the cost of installing a gas line on Lagoon Drive.

Drainage: Task 6.2, "Drainage Analysis" (by Park Engineering, Inc.) of the 1981 Master Plan for Honolulu International Airport contains a detailed hydrologic and hydraulic study of the major drainage courses which affect HIA. The findings of the study indicate that Manuwai Canal does not have sufficient capacity for runoff from storms with recurrence intervals of 5 years and ponding will occur. While FAA criteria is based on 5 year storm drainage capacity with adequate ponding areas between taxiways and runways, construction in the interisland cargo area and other improvements will drastically reduce the ponding area. The North Peripheral Ditch traverses areas used for industrial-commercial activities. In addition, the State Highways Division has designed the Interstate Highway (H-1) storm drainage system, which feeds this drainage way, using a 50 year storm standard. Therefore the North

Peripheral Ditch should meet at least the 10 year storm drainage standards of the City and County of Honolulu and possibly the 50-year recovery interval storm. A preliminary study currently being conducted for the Airport Perimeter Road by ESH indicates that the culvert on Lagoon Drive at the North Peripheral Ditch does not have sufficient capacity to meet the 50 year storm standard of the State Department of Transportation Highways Division. In addition, the ditch downstream of Lagoon Drive is lined only on the south side. Improvements to this section of the North Peripheral Ditch, including excavation to enlarge the cross-section of the ditch and lining the north side should be coordinated with the improvements to the culvert.

Detailed analysis, findings and recommended improvements for the Manuwai Canal and the North Peripheral Ditch will be contained in the M & E Pacific, Inc. study, "Adequacy of HIA Utility System to Take 1990 Expansion Load". The study will also address the impact of the proposed improvements at the interisland cargo area for Manuwai Canal and impact of the proposed International Terminal Building on the North Peripheral Ditch. The hydrologic and hydraulic conditions to be considered by the M & E Pacific, Inc. study will remain relatively constant through the projected design year and the recommended improvements should be adequate to the year 2010.

CHAPTER I - UTILITIES REQUIREMENTS: WATER

Water for Honolulu International Airport (HIA) is obtained through the 24-inch BWS main located on Nimitz Highway. Three 16-inch mains serving the HIA are connected to the 24-inch main and run along Lagoon Drive, Rogers Boulevard, and Paiea Street respectively. Flows are measured by three 8-inch turbine meters (Lagoon Master Meter, Aolele Master Meter, and Paiea Master Meter). All the incoming 16-inch mains are interconnected by a 16-inch main running along Aolele Street. With the completion of Lagoon Drive Improvement, Phase III in 1991, the extension of the 16-inch main on Lagoon Drive will be completed along the full length of Lagoon Drive. The major portion of HIA developed area is now served by 16-inch mains and 12-inch mains complete the water supply loop system. Current consumption for HIA is approximately 1.8 mgd.

The total water consumption reflected in water meter readings for the airport includes usage by passenger sensitive activities and insensitive activities, water loss and consumption by the U.S. Air Force at Hickam Air Force Base. Because of variability of the above factors, the conventional method based on population forecast was not used to estimate future water demand for the entire Airport.

The most significant variable affecting water usage is airport passenger volume for areas handling passenger traffic. Accordingly, a relationship was established between historic water consumption data and passenger volumes. An effort was made to account for losses and

WATER DEMAND RATES

DESIGN YEAR	TOTAL (ANNUAL)	AV. DAY PEAK MO. (in millions of gallons)	PEAK HR AV DAY/PEAK MO (in millions of gallons)
1995	812.2	2.42	0.263
2000	867.2	2.52	0.281
2010	978.2	2.74	0.316

* Note: The above water demand rates are less than the water demand projected for the year 2000 in the 1981 Honolulu International Airport and Environs Master Plan Study.

The above water demand rates assume use of potable water for airport irrigation. An appreciable savings in potable water consumption however is anticipated with the future use of non-potable water for all irrigation at the airport. Currently approximately 100,000 gallons per day is used for airport irrigation. The projected future needs for the new interisland terminal and anticipated developments at South Ramp are estimated at 50,000 gpd. The non-potable system utilizing Kulauao Spring Water is currently used to irrigate landscaping on State highways and was developed by the State DOT and the City and County of Honolulu Board of Water Supply (BWS). Construction is now in progress to extend the non-potable main to the airport with use of non-potable water scheduled to begin in 1991. Possibilities are also being explored to replace airport potable water used to irrigate the HAFB golf course with non-potable water, with funding being the only obstacle to extending the non-potable water line to HAFB. HAFB uses approximately 800,000 gpd for

irrigation of which 600,000 gpd currently passes through the airport water system.

The non-potable water capacity of Kulaoao Spring is 5 mgd, sufficient to meet the needs of the State Highways Division, Honolulu International Airport and HAFB. Use of non-potable water for irrigation at HAFB in the future is considered a virtual certainty.

Adequacy for fire flows were investigated by evaluating fire hydrant flow tests conducted by American Fire Extinguisher Company and Oahu Fire Protection, Inc. at selected locations. The BWS standards require the pipe network to be sized to satisfy the following criteria:

- The system must pass peak hour flow of 3 times the average demand rate with a minimum system pressure of 40 psi.

- The system must pass maximum day flow of 1.5 times the average day rate plus fire flow with a minimum residual pressure of 20 psi at critical hydrant.

An analysis conducted in 1988 for the South Ramp Development Plan indicates the pipe network is adequate to meet both the domestic and fire flows for South Ramp. Recent fire hydrant flow data tabulated below, continue to substantiate the adequacy.

Hydrants Tested March 30, 1989

Hydrant No: 604

Location: End Lagoon Drive, vicinity of access road to Fire Station #2

Static Pressure: 67 psi

Residual Pressure: 21 psi at 2500 gpm flow at hydrant

Hydrant No: 617

Location: Lagoon Drive, vicinity of Mokuea Street

Static Pressure: 65 psi

Residual Pressure: 28 psi at 2880 gpm flow at hydrant

Hydrant No: 6553

Location: Kalewa Street

Static Pressure: 73 psi

Residual Pressure: 29 psi at 2900 gpm flow at hydrant

Hydrant Tested March 30, 1990

Hydrant No: 620

Location: Mokuea Street

Static Pressure: 60 psi

Residual Pressure: 41 psi at 2719 gpm flow at hydrant

Evaluation of recent fire hydrant flow tests for North Ramp indicate the pipe system for North Ramp may be adequate to meet both domestic and

fire flows if fire flow requirement of 2,000 gpm as required by Honolulu BWS standards for small shopping center, neighborhood business, etc. is used. However if land use of the North Ramp is classified as light industrial , the fire flow would be short of the 4,000 gpm required by BWS. Further testing, beyond the scope of this report, may reveal localized areas with pipe sizes smaller than 8 inches that may not meet 2000 gpm demands.

Tabulated below are recent fire hydrant flow test data for North Ramp:

Hydrant Tested March 30, 1989

Hydrant No: 4655
Location: Aolele Street, vicinity of tank farm
Static Pressure: 73 psi
Residual Pressure: 29 psi at 2900 gpm flow at hydrant

Hydrant No: 4691
Location: Elliot Street
Static Pressure: 69 psi
Residual Pressure: 27 psi at 2800 gpm flow at hydrant

Hydrant Tested March 30, 1990

Hydrant No: 181

Location: Aowena Way

Static Pressure: 75 psi

Residual Pressure: 39 psi at 2016 gpm flows at hydrant

Hydrant No: 5213

Location: Aowena Way

Static Pressure: 76 psi

Residual Pressure: 44 psi at 2192 gpm flow at hydrant

Hydrant No: 301

Location: Central Concourse

Static Pressure: 58 psi

Residual Pressure: 28 psi at 2851 gpm flow at hydrant

Hydrant No: 307

Location: Aolele Street at Aowena Place

Static Pressure: 83 psi

Residual Pressure: 65 psi at 2786 gpm flow at hydrant

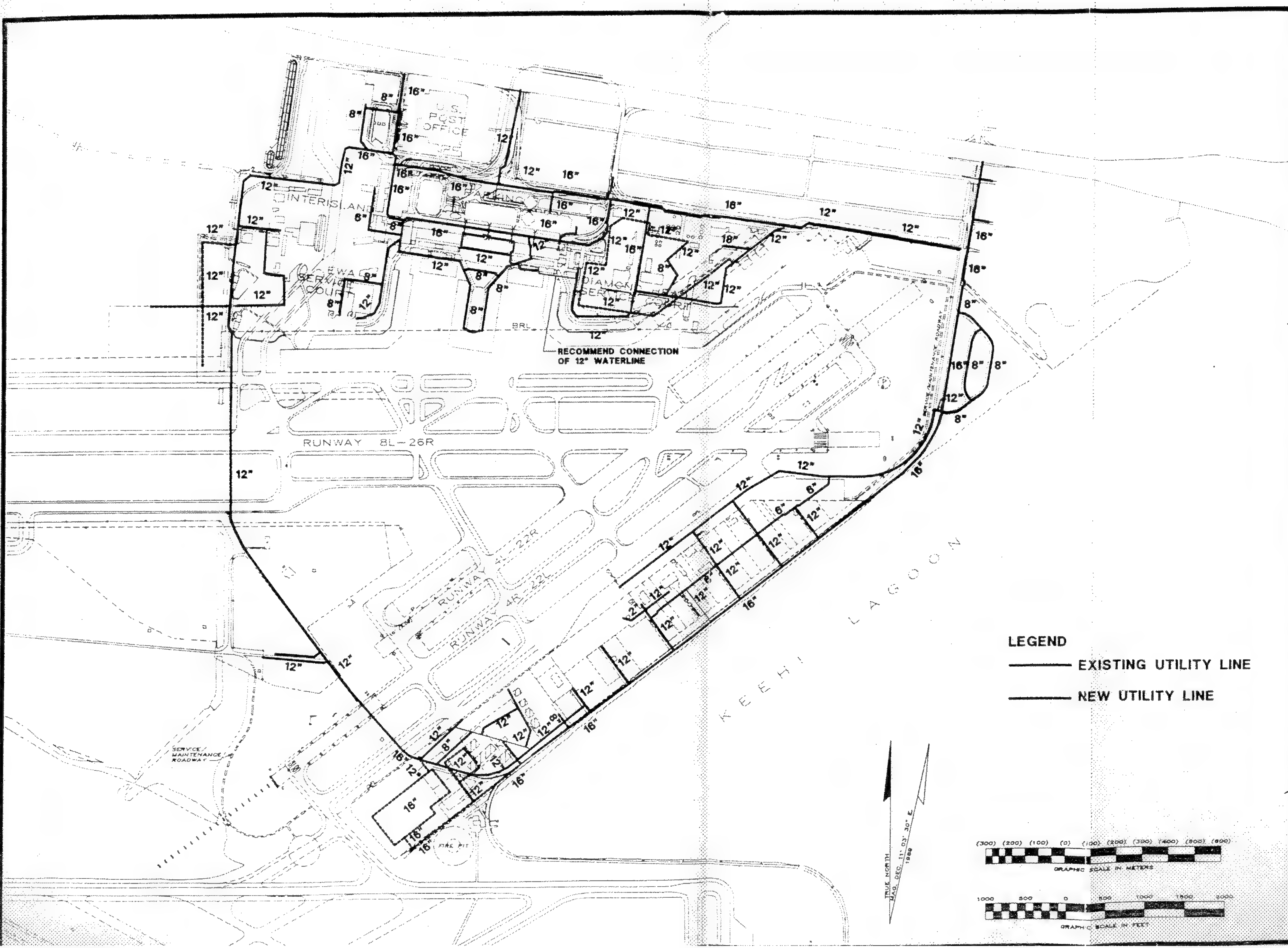
Hydrant No: 4705

Location: Elliot Street

Static Pressure: 84 psi

Residual Pressure: 58 psi at 2650 gpm flow at hydrant

The current water loss of approximately 0.191 mgd at the Honolulu International Airport is noted with concern. While upgrading of the water system together with the expansion of the airport will help reduce the rate of water loss, much remains to be done. The large magnitude of loss indicates a need for a concerted effort to find the cause and take action to reduce the loss.



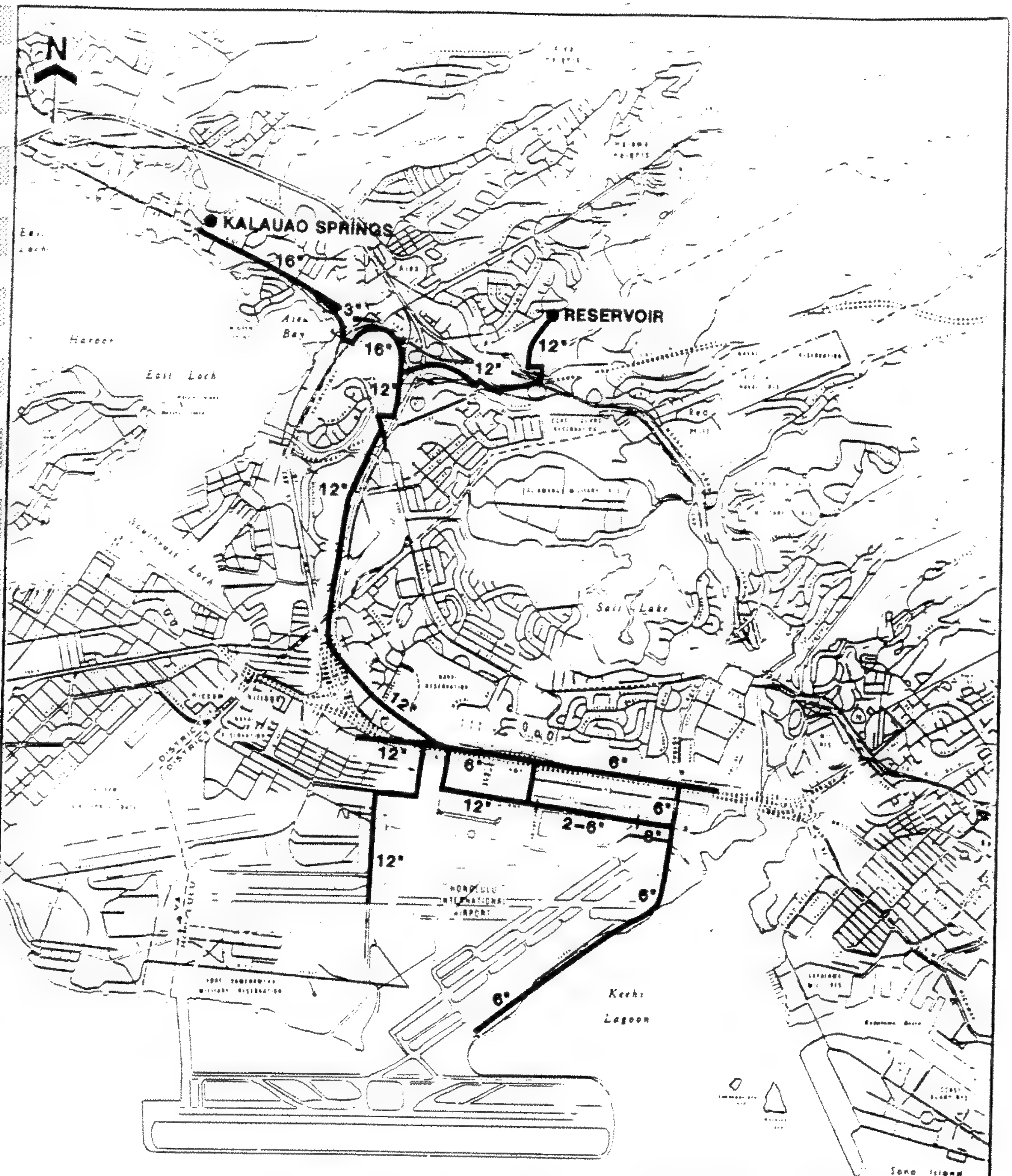
WILSON OKAMOTO & ASSOCIATES, INC.
ENGINEERS • ARCHITECTS • PLANNERS
1150 S. King St. Suite 800
Honolulu, Hawaii ph. 531-5261

HONOLULU INTERNATIONAL AIRPORT UTILITIES EVALUATION

UTILITY PLAN

POTABLE WATER SYSTEM

FIGURE 4



HONOLULU INTERNATIONAL AIRPORT UTILITIES EVALUATION

FIGURE 5 NON-POTABLE WATER SYSTEM

CHAPTER II - UTILITY REQUIREMENTS: SEWER

The internal sewer system at the Honolulu International Airport (HIA) is being upgraded with the construction now in progress. It is assumed that the required sizing of laterals from HIA to the 36-inch Aolele Street interceptor will be provided with upgrading and expansion of Interisland facilities (including a new sewer pump station and force main see Figure 6), the Overseas Terminal, and the International Terminal Building. However, the Kamehameha Highway Pumping Station which receives the HIA flows and the sewer facilities downstream of the Kamehameha Highway Pumping Station (36-inch force main and 54-inch gravity interceptor along Nimitz Highway) are at or rapidly nearing capacity. Planned upgrades of the 36-inch force main and 54-inch Nimitz interceptor do not include Ke'ehi Lagoon and HIA sewage flows and will not be sufficient to accommodate the projected flow.

The sewer system serving HIA consists of two basic systems:

1) A 36-inch interceptor sewer along Aolele Street for the North Ramp serving the Interisland facilities, the Overseas Terminal, and all activities fronting Aolele Street. The 36-inch interceptor will also serve the New International Terminal Building and the proposed developments north of Aolele Street.

2) The South Ramp Sewer Pumping Station (Sewer Pump Station "C") and 14-inch force main running along the old Lagoon Drive alignment

will serve existing and future developments in South Ramp. The Kalewa Street industrial area is served by a separate pumping station and a 6-inch force main.

Flows from North Ramp and South Ramp areas feed into the Aolele Street interceptor at Lagoon Drive which discharges into the Kamehameha Highway Sewer Pump Station at Ke'ehi Lagoon Park. All flows are carried to the Sand Island Sewer Treatment Plant and treated before being discharged into the ocean.

The State Harbors Division has proposed a major development for Ke'ehi Lagoon, with anticipated flows of approximately 12.6 MGD. The projected HIA and tributary flow (excluding the Ke'ehi Lagoon development) will fully utilize the capacity of the 42-inch interceptor line, Kamehameha Highway Pumping Station, 36" force main, and 54" interceptor. Inclusion of flow from the proposed Ke'ehi Lagoon developments will exceed available capacity.

North Ramp and South Ramp sewage flows were projected separately. The North Ramp consists primarily of passenger terminals and auxiliary facilities related to passenger activities, whereas South Ramp consists primarily of warehousing and industrial activities. The year 2010 projected water usage (for North Ramp) developed in Chapter 1 and based on projected passenger count was used as the sewage flow for North Ramp. For South Ramp, future development is expected to be similar to current industrial and warehousing activity. Therefore current pumping data

from South Ramp Sewage Station "C" (105,000 gpd) was divided by the 27 acres now occupied for a generation rate of 3900 gpad. This factor was applied to the total future developed area to determine the year 2010 sewage flow. Applicable pumping data for the Kalewa Street pumping station was not available. Therefore the projected sewage flow for the Kalewa Street industrial area was based on the City and County of Honolulu, Division of Wastewater Management criteria for General Industry. The 100 capita per acre for General Industrial and the 80 gallons per day per capita was applied to the total area of Kalewa Street industrial area.

For the design year 2010, the projected design peak flow from HIA is 9.31 MGD; 7.25 MGD from North Ramp and 2.06 MGD from South Ramp (including Kalewa Street industrial area). Projected design peak flow from the surrounding contributing area (excluding Ke'ehi Lagoon development) is 10.14 MGD. Therefore, the design year 2010 projected design peak flow for the 42-inch collector sewer feeding into Kamehameha Highway Pumping Station is 19.45 MGD.

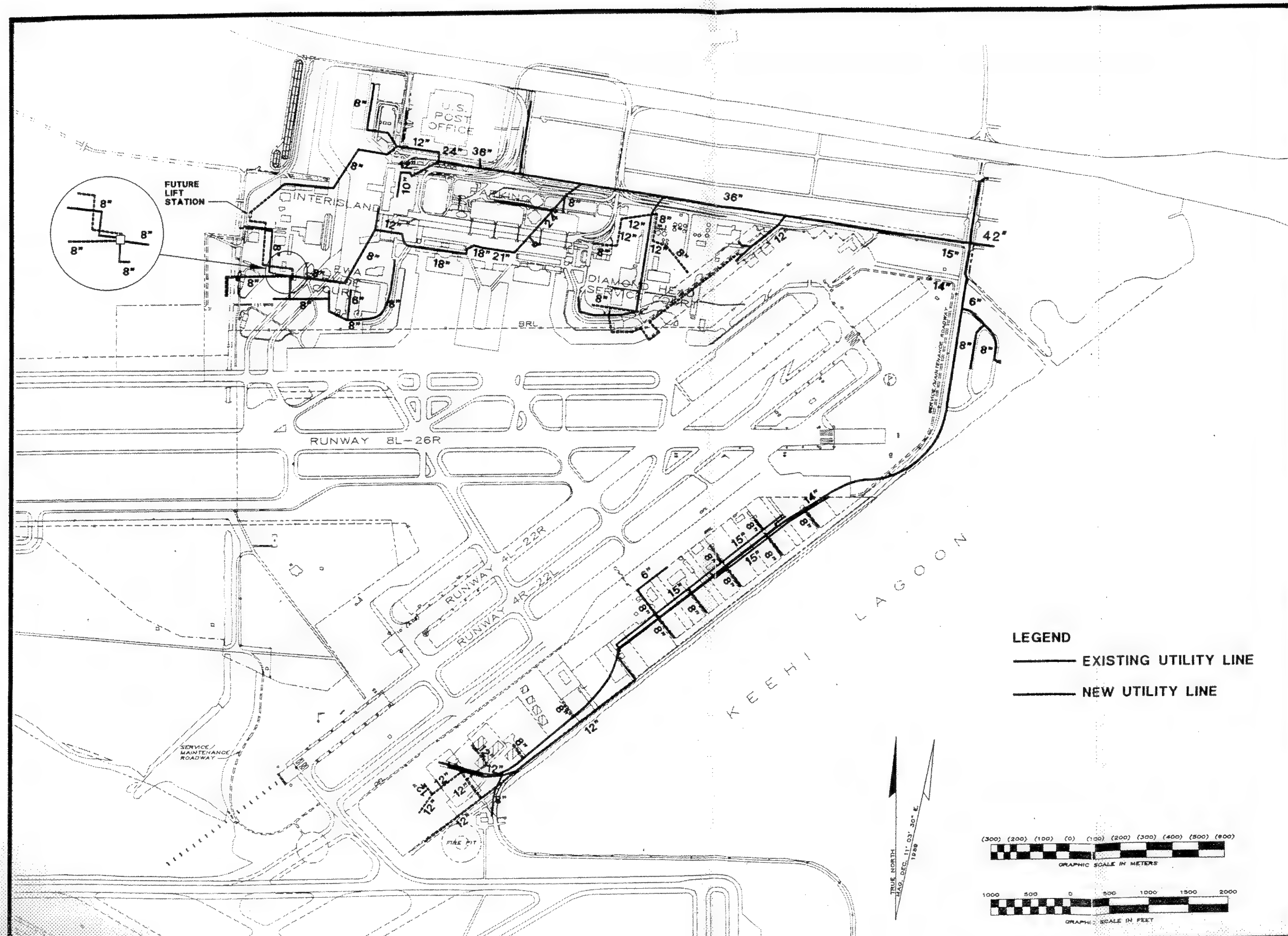
The projected design peak flow from the Kalewa Street industrial area is 1.15 MGD. However the Kalewa Street industrial area pumping station has a maximum capacity of only 0.288 MGD. Moreover this pumping station does not have an emergency generator to power the pumps during a power outage. Any plans for further development of the Kalewa Street industrial area should consider improvements to the pumping station,

including increasing the pumping capacity, wetwell volume and providing an emergency power generator.

The projected design peak flow from South Ramp (excluding the Kalewa industrial area) is 0.91 MGD. Pump Station "C" has a maximum capacity of 1.2 MGD; hence sufficient capacity to handle the projected design peak flow from South Ramp. The existing elevation of the area proposed for General Aviation drops in the Eastern direction to approximately 5 feet. If structures requiring sewage are proposed in this area in the future , another sewage lift station may be required since there may not be sufficient slope for the sewage line to the existing sewer main for gravity flow.

A separate study analyzes the options available for disposal of sewage from HIA and the proposed Ke'ehi Lagoon development. One alternative for sewage disposal is to construct a submarine force main directly to the Sand Island and overland to the treatment Plant. If this is done, the 36-inch sewer line on Aolele Street, the 14-inch Lagoon Drive force main from the South Ramp Pumping Station "C", the 6-inch Kalewa Street industrial area force main and the 42-inch collector sewer will be adequate to accommodate the projected design peak flows from HIA together with the flows from the surrounding contributing area. Nevertheless, as the passenger projections for the year 2010 are approached, flow in the 42-inch collector sewer should be re-evaluated since the analysis indicates that near capacity flows will be carried by the sewer line.

It must be emphasized that sewer facilities downstream of the Kamehameha Highway Pumping Station are now at or rapidly nearing capacity. The State Department of Transportation is aware of this problem and has undertaken a feasibility analysis to evaluate options for handling the sewage requirements for both the Ke'ehi Lagoon development and the expansion of HIA.



WILSON OKAMOTO & ASSOCIATES, INC.
ENGINEERS • ARCHITECTS • PLANNERS
1150 S. King St. Suite 800
Honolulu, Hawaii ph. 531-5261

HONOLULU INTERNATIONAL AIRPORT UTILITIES EVALUATION

UTILITY PLAN

SEWER SYSTEM

FIGURE 6

CHAPTER III - UTILITY REQUIREMENTS: ELECTRICITY

Electric power to the HIA is supplied by Hawaiian Electric Company (HECO) from its substations at Ke'ehi and Makalapa. In addition, there are two emergency generators at HIA; one rated at 600 KW/4160 V 3 phase and another 400 KW/4160 V 3 phase, that provide power for critical operating functions during any power outage. One generator supplies power for airfield lights, control tower, FAA navigation equipment and the weather bureau. The other generator supplies power to the passenger terminal.

The primary feeder lines, each rated 11.5 KV/3 phase from the substations are:

KE'EHI SUBSTATION
- Airport Feeder No. 1
- Airport Feeder No. 2
- Ke'ehi Feeder No. 5
- Ke'ehi Feeder No. 8

MAKALAPA SUBSTATION
- Makalapa Feeder F1

Listed below are the electric consumption for interisland and overseas terminal for 1987 and 1988.

ELECTRIC POWER CONSUMPTION AT
MASTER ACCOUNT NO. 33-999-351-75

	1987 KWH Usage	1988 KWH Usage
January	5,585,627	4,807,970
February	6,260,422	6,138,307
March	5,606,237	6,049,178
April	5,953,907	5,961,896
May	6,355,749	5,515,717
June	6,502,857	5,920,202
July	6,631,851	6,423,655
August	6,632,422	6,408,039

	1987 KWH Usage	1988 KWH Usage
September	6,660,699	6,342,372
October	6,402,793	6,683,950
November	5,180,355	6,411,297
December	6,926,615	6,581,734
Monthly Average	6,224,960	6,103,693
Daily Average	204,656	200,669

The average electrical consumption for the Overseas and Interisland Terminals were 204,700 KWH per day and 200,700 KWH per day for 1987 and 1988 respectively, resulting in consumption of approximately 83 watt-hours per square foot per day. For analysis and projection to the design year, a rate of 90 watt hours per square foot per day was used for the terminals to account for expected increased power demands such as air conditioning.

South Ramp however consists largely of industrial and warehousing type activities. An electrical consumption rate of 35[1] watt-hours per square foot per day was used.

Electrical power requirements for design years based on projected floor area requirements are:

---

1 [1]ES Lighting Handbook, 1981 Application Volume

DESIGN YEAR	FLOOR AREA[2] (SQ. FT.)		PROJECTED ELECTRICAL CONSUMPTION (KWH/DAY)
1995	Overseas Terminal	2,748,000	247,300
	Interisland		
	Pass. Terminal	373,000	33,600
	Maint. Facility	328,000[3]	16,400
	International Terminal	1,740,000[4]	156,600
	South Ramp	1,371,000[5]	48,000
		TOTAL	501.900[6]

Automated People Mover (power requirement is 6 megawatts)

DESIGN YEAR	FLOOR AREA[2] (SQ. FT.)		PROJECTED ELECTRICAL CONSUMPTION (KWH/DAY)
2005	Overseas Terminal	3,275,000	294,800
	Interisland		
	Pass. Terminal	373,000	33,600
	Maint. Facility	328,000[3]	16,400
	International Terminal	1,740,000[4]	156,600
	South Ramp	1,371,000[5]	48,000
		TOTAL	549,400[6]

Automated People Mover (power demand is 6 megawatts)

[2] Table 4-1, Honolulu International Airport Master Plan Update and Noise Compatibility Program, October 1988.

[3] Maintenance Facility Area approximated.

[4] International Terminal Study (KPMG Peat Marwick) August, 1989.

[5] Floor area estimated from available land area.

[6] Does not include electric consumption for automated people mover.

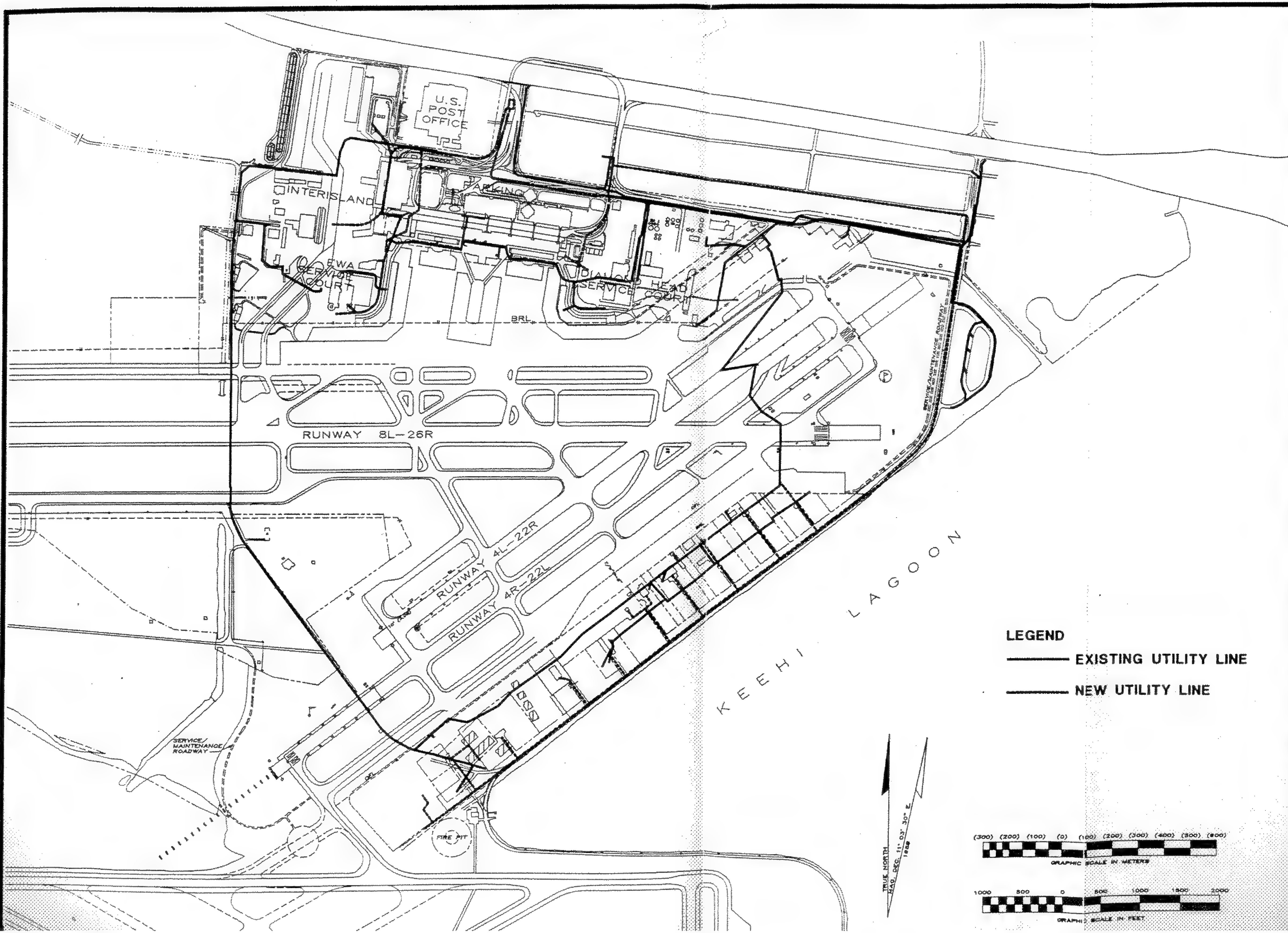
DESIGN YEAR	FLOOR AREA[2] (SQ. FT.)		PROJECTED ELECTRICAL CONSUMPTION (KWH/DAY)
2010	Overseas Terminal	3,275,000	294,800
	Interisland		
	Pass. Terminal	386,000	34,700
	Maint. Facility	328,000[3]	16,400
	International Terminal	2,200,000[4]	198,000
	South Ramp	1,371,000[5]	48,000
		TOTAL	591,900[6]
	Automated People Mover (power demand is 6 megawatts)		

The floor area forecast for the design years are not yet available. In particular, the floor area forecast for Interisland Maintenance Facility has not yet been established. The floor area used to project electric power consumption is based on probable "ballpark" area requirements and must be verified when official floor area forecasts are determined. While the area mauka of Aolele Street is being planned for airport use, no floor area data is available at this time. Also, floor area and construction schedule for the International Terminal Building are subject to change as the engineering designs are finalized. While the power demand for the automated people mover is estimated at 6 megawatts the power consumption has not been determined at this time. Specific electrical use will be identified by the "Electrical Distribution System Modernization Study" for 1992 being conducted by M&E Pacifi (M&E).

The M&E study will contain more precise electric consumption data. The projected electric consumption here in should be verified with the M&E report and the values corrected to reflect the more precise data.

To meet the increased power demand for the HIA expansion, a new HECO substation is planned to be constructed at Rodgers Boulevard in December 1992 to service the expansion of the Overseas Terminal, the Interisland Terminal and the International Terminal Building. New ducts from the Rodgers Boulevard substation will be constructed to the Interisland Terminal, the Overseas terminal and the International Terminal Building. Existing duct capacity in the vicinity of the Interisland Terminal will be increased. Another new HECO substation will be constructed on Lagoon Drive in the vicinity of Kalewa Street to service South Ramp. There are sufficient spare ducts on Lagoon Drive to service South Ramp.

The capacity of the two existing emergency generators is insufficient to meet the increased demand for the target design years. While capacity of the emergency generators must be increased, the sophisticated equipment now in use and others to be installed in the future dictate that more precise criteria must be established regarding the functions to be supplied with electricity and kept operational during power outage. The criteria becomes increasingly significant as the magnitude of emergency power to be supplied increases. Impact on critical airport functions as well as space and cost allocations must be seriously considered in establishing the criteria.



WILSON OKAMOTO & ASSOCIATES, INC.
ENGINEERS • ARCHITECTS • PLANNERS
1150 S. King St. Suite 800
Honolulu, Hawaii ph. 531-5261

HONOLULU INTERNATIONAL AIRPORT UTILITIES EVALUATION

UTILITY PLAN

ELECTRICAL SYSTEM

FIGURE 7

CHAPTER IV - UTILITY REQUIREMENTS - TELEPHONE

Hawaiian Telephone Company (HTCO) services HIA from the Moanalua Central Office (MCO) located on Moanalua Road at Jarrett White Road. MCO is currently equipped for 22,000 lines but has an ultimate capacity of 27,000 lines. HIA is served with approximately 3,200 incoming lines, consisting of 1700 lines entering the Main Telephone Equipment Room (MTER) at the Main Terminal Building, 900 lines which directly service the United Airlines and 600 lines which service the tenants at South Ramp. There are also 25 lines from the Downtown Central Office feeding into the MTER. The interisland maintenance facilities are served from Elliot Street. The above does not include the Signal Corps communications lines within the HIA nor the control tower communications network.

All 600 lines in South Ramp are now filled. However, HTCO has scheduled the installation of a new 900 line cable along Lagoon Drive in 1991 to serve the new tenants at South Ramp. The capacity will then increase from 600 lines to 1500 lines. HTCO is considering the installation of a remote switching unit at South Ramp to service this increased capability. The remote switching unit will also allow interconnection between South Ramp and the Main Terminal.

The telephone lines at MTER are now approximately 90 percent filled. To provide for expansion of HIA, HTCO has scheduled installation of 800 new lines for a new telephone central office to be located at Paiea Street

or the new International Terminal Building. The new lines will be activated concurrently with the completion of the new Diamond Head Concourse and International Terminal Building. As existing interisland maintenance facilities are demolished and replaced, telephone service from Elliot Street will be terminated and the new telephones serviced from the MTER. As the use of state of the art telephone equipment (such as computerized airplane reservations and PBX) by the tenants increase, increased demand is placed on the capacity of the MTER. HTCO is considering renovating and upgrading the MTER to meet this demand. Coincidentally, new fiber optic cables are scheduled to be installed on Nimitz Highway in the vicinity of the HIA in 1991 which leads directly to the Downtown Central Office. HTCO is considering connecting MTER directly to the Downtown Central Office via fiber optic cables. Also, a new remote switching unit is proposed to be located at the HTCO maintenance office on Ualena Street.

The telephone facilities at HIA are provided and maintained by HTCO with the necessary underground conduits at HIA installed and owned by the Airports Division. There are 20 HTCO conduits on Paiea Street which terminates at Aolele Street. The HTCO conduits feed into 14 Airports Division conduits which are connected to the MTER. The new telephone cables are larger than the original cables for which the existing conduits were designed. Therefore, the number of Airports Division conduits must be increased from 14 to 16. Also, three manholes on Aolewa Place are contaminated with oil and must be corrected or replaced. While new conduits are being installed with each increment of

expansion, additional conduits may be required to fulfill future expansion. The policy of HTCO is to install cables on an as-needed basis to meet incremental projected demands.

CHAPTER V - UTILITY REQUIREMENTS: AVIATION FUEL

Aviation fuel is conveyed to the Honolulu International Airport satellite storage complex from the refinery at Campbell Industrial Park, tanker unloading facilities and storage tanks. Aviation fuel is stored at the satellite storage complex prior to being pumped to aircraft. Domestic aviation fuel is stored at the satellite storage complex in two, 32,000 barrel tanks. The oil companies furnishing the fuel are Chevron USA, Inc. and Hawaiian Independent Refinery, Inc., who supply bonded and domestic aviation fuel used at HIA. Union Oil, Texaco and Shell Oil previously furnished aviation fuel but have since discontinued their operation.

While it cannot be forecast whether the present suppliers will continue to furnish aviation fuel to the Design Year, it can be assumed that the existing aviation fuel supply facilities, subject to relocation, will continue to supply fuel to HIA without interruption.

Another source of fuel is the airlines' acquiring their own fuels directly. The airlines have formed a consortium of airline members called Honolulu Fueling Facilities Corporation (HFFC), and have developed their own facilities and transmission lines through the purchase of the former Shell Oil and Texaco facilities at both Sand Island Access Road and at HIA. The HFFC aviation fuel facility is currently operated by a private contractor. HFFC has added 234,000

barrels of new storage facilities since they acquired the facilities in December 1981 to bring the current storage capacity to 842,000 barrels.

The existing tanker unloading facilities and shore tanks have sufficient capacity to meet the demands for the Design Year. Construction of additional tanks, however, are being considered.

The existing fuel transmission facilities are sufficient to supply the satellite storage complex at a rate of 1950 gallons per minute (gpm). Current consumption rate of aviation fuel is 1350 gpm. With a projected demand increase of 50 percent by the Design Year 2010, steps should be taken to plan for an increase in the fuel transmission capacity.

The HIA satellite complex is capable of receiving up to three sources simultaneously. The transmission mains which supply aviation fuel to the HIA satellite complex are presently operating near capacity. Chevron has three four-inch mains which are operating at capacity. The HFFC domestic fuel lines have had repair work done and may require replacement of their undersea portion in the future. The HFFC bonded fuel main is adequate for the present time. To meet the projected design year demand for aviation fuel, an additional main across Ke'ehi Lagoon from the Sand Island tank farms to HIA should be constructed.

The HIA satellite storage complex has a storage capacity for 2.8 days of aviation fuel. It is recommended that the storage capacity be increased to four days. Part of the new International Terminal Building will

occupy the present satellite storage complex area. The State of Hawaii is planning to increase the aviation fuel storage capacity together with the relocation of the HIA satellite storage complex. The plans call for increasing both bonded and domestic aviation storage capacity by 83% from 180,000 barrels to 330,000 barrels.

The fuel transmission facility from the satellite fuel storage complex to the aircraft parking gates is inadequate to meet future demands and the bonded fuel pumps are barely adequate for current demands. Transmission mains from the satellite complex to the aircraft parking gates are adequate. New mains are being installed with the on going construction. The number of fuel hydrant carts for increased aircraft fueling in the future also require consideration. It is, however, assumed that the number of fuel hydrant carts will be increased by the vendors or users together with the construction now in progress.

While fuel lines and fuel hydrants within the aircraft aprons are being installed together with the construction at South Ramp, currently there are no fuel lines from the satellite complex to South Ramp. Initially the aircraft at the air cargo facilities in South Ramp can be adequately serviced by fuel trucks.

Depending on the extent of fuel consumption, the mode of fuel transmission may need to be changed from fuel trucks to hydrant fueling. A cost feasibility study and other interfacing plans are currently being considered for the aviation fuel transmission to South Ramp.

CHAPTER VI - UTILITY REQUIREMENTS: SYNTHETIC NATURAL GAS

Gasco, Inc. (GASCO) was contacted to determine the adequacy of the existing underground pipe lines and projected supply to handle additional demand loads for the target year 2010.

Synthetic natural gas is used by the flight kitchens, restaurants, and the service vehicles of the airlines, hence the demand is related to passenger volume. Based on the two-fold increase in passenger traffic, no difficulty is anticipated in meeting the design year demand.

Synthetic natural gas is processed at the GASCO's plant at Barbers Point and is transmitted through a high pressure (500 psi) 16-inch main, and terminates at the Kapalama Regulation Station. The transmission line also serves other regulation vaults located along the route. The regulation vaults reduce the high pressure in the transmission main to distribution pressure for local lines.

The vault closest to HIA is located at Valkenburgh Street. However, this vault is reserved for use in the future. HIA is served by the Aiea Vault and the Kapalama Regulation Station through mains on Rodgers Boulevard and Paiea Street, which tap into the 4" line on Nimitz Highway. The 4-inch Rodgers Boulevard main services the Interisland Terminal, the Main Terminal and the Ewa concourse area. A 6-inch main on Paiea Street services the Diamond Head service court and fuel farm area. The new International Terminal Building will be constructed on

the area now occupied by the fuel farms and general aviation. The Paiea Street main will service the International Terminal Building.

The required sizing and extension of gas lines to service the renovation and expansion now in progress at HIA such as the new Interisland Terminal and the new International Terminal, will be provided together with the above construction.

The current operating pressures on the Rodgers Boulevard and Paiea Street mains are 10 to 20 pounds per square inch. Gas appliance can operate at pressures as low as 5 psi. The current system provides a reserve capacity to meet increased demand for existing customers. However as new customers are identified in the future and precise demands are established, system adequacy should be re-evaluated with GASCO. Where opportunity permits, the piping system should be looped, inasmuch as such looping will help gas pressure and supply.

Propane is supplied by cylindrical pressure vessels refilled by Gasco trucks. No problems are anticipated in meeting the additional demand for propane.

There are no gas mains serving South Ramp. The flight kitchens for Continental Airlines and Marriott, which will be constructed in South Ramp will be initially served from tanks. The flight kitchen's tanks will be refilled from Gasco trucks. It is probable that the future development of Ke'ehi Lagoon proposed by the State Harbors Division will

generate additional synthetic natural gas demand. GASCO will consider installing a gas main on Lagoon Drive when projected sales can support the initial installation cost.

APPENDIX

MONTHLY WATER USAGE FOR
HONOLULU INTERNATIONAL AIRPORT
(IN THOUSAND GALLONS)

YEAR	MONTH	MASTER METER TOTAL	CUSTOMER TOTAL	DOTA METER METER	TOTAL LOSS	AIR FORCE CONSUMP.
1984	January	37,220	12,810	12,244	12,166	7,356
	February	41,313	14,955	17,403	8,955	12,795
	March	52,148	20,515	18,117	13,516	17,446
	April	44,952	17,048	15,766	12,138	14,660
	May	53,716	23,420	17,245	13,051	20,715
	June	53,006	30,400	17,455	5,151	20,339
	July	46,077	15,906	16,330	13,841	13,146
	August	51,347	22,444	15,369	13,534	20,137
	September	41,236	17,051	16,589	7,596	15,011
	October	44,838	16,163	19,554	9,121	13,946
	November	32,787	8,612	16,088	7,287	6,518
	December	30,572	7,596	18,979	4,002	4,916
	Total	529,217	206,920	201,939	120,358	166,985
1985	January	30,707	7,101	19,862	3,744	4,135
	February	26,025	5,283	20,360	182	2,898
	March	33,239	12,306	25,123	(4,190)	9,209
	April	41,715	14,802	24,441	2,472	11,756
	May	41,068	14,574	20,094	6,400	11,892
	June	42,615	17,461	19,548	5,606	14,527
	July	49,704	19,266	24,431	6,007	15,508
	August	52,651	23,640	28,695	6,376	19,796
	September	44,022	16,498	20,987	6,537	12,780
	October	40,612	13,959	21,756	4,897	10,739
	November	31,381	7,841	20,074	3,466	4,592
	December	46,374	10,188	26,594	9,592	6,375
	Total	480,113	162,919	266,108	51,089	124,207
1986	January	32,544	12,624	26,440	(16,520)	9,502
	February	36,633	5,346	13,757	17,530	8,730
	March	41,239	15,594	25,027	618	8,915
	April	44,546	16,297	20,578	7,671	12,222
	May	43,142	15,234	21,520	6,388	11,284
	June	46,404	18,250	22,634	5,520	12,985
	July	49,670	19,026	23,804	6,840	14,225
	August	55,303	20,057	28,835	6,411	15,436
	September	43,421	14,679	21,837	6,905	11,194
	October	54,054	19,531	24,708	9,815	33,309
	November	48,600	14,206	24,213	10,181	10,469
	December	51,705	19,074	24,248	8,383	14,724
	Total	547,261	189,898	277,601	79,742	162,935

SEWAGE FLOW CALCULATIONS
FOR HONOLULU INTERNATIONAL AIRPORT AND
AIRPORT INDUSTRIAL AREA
FOR THE YEAR 2010

Zone	Area (ac)	Equivalent Population	Qav (mgd)	Flow Fact.	Qmax (mgd)	Dry I/I (mgd)	Qav (mgd)	Qmax (mgd)	Wet I/I (mgd)	Qpeak Qv (mgd)	Pipe Dia (inches)	Slope (ft/ft)	Vel. (ft/sec)	Qa (mgd)
Tributary 1:														
Aliamanu	150	4,000	0.32	3.93	1.26	0.14	0.46	1.40	0.41	1.81				
Aliamanu School	26	375	0.03	5	0.15	0.01	0.04	0.16	0.07	0.23				
Post Office	7	650	0.05	5	0.25	0.02	0.07	0.27	0.02	0.29				
Inter is.	25	7,685	0.62	3.49	2.16	0.27	0.89	2.43	0.07	2.50				
Subtotal, Tributary 1			1.02		3.82	0.44	1.46	4.26	0.57	4.83				
Accumulated Total			1.02		3.82	0.44	1.46	4.26	0.57	4.83	36	0.008		12.17
Tributary 2:														
A-2	36	7,760	0.62	3.49	2.16	0.27	0.89	2.43	0.10	2.53				
2	28.38	2,838	0.23	4.20	0.97	0.10	0.33	1.07	0.08	1.15				
Subtotal, Tributary 2			0.85		3.13	0.37	1.22	3.50	0.28	3.68				
Accumulated Total			1.87		6.95	0.81	2.68	7.76	0.75	8.51	36	0.001	2.98	13.58

SEWAGE FLOW CALCULATIONS
FOR HONOLULU INTERNATIONAL AIRPORT AND
AIRPORT INDUSTRIAL AREA
FOR THE YEAR 2010

Zone	Area (ac)	Equivalent Population	Qav (mgd)	Flow Fact.	Qmax (mgd)	Dry I/I (mgd)	Qav (mgd)	Qmax (mgd)	Wet I/I (mgd)	Qpeak Qv (mgd)	Pipe Dia (inches)	Slope (ft/ft)	Vel. (ft/sec)	Qa (mgd)
Tributary 3:														
A-3	27.3	5,380	0.43	3.57	1.54	0.19	0.62	1.73	0.08	1.81				
3	18.0	1,800	0.14	4.55	0.64	0.06	0.20	0.70	0.05	0.75				
Subtotal, Tributary 3			0.57		2.18	0.25	0.82	2.43	0.13	2.56				
Accumulated Total			2.44		9.13	1.06	3.50	10.19	0.88	11.07	36	0.0012		14.71
Tributary 4:														
A-4	25.5	580	0.05	5	0.25	0.02	0.07	0.27	0.07	0.34				
4	35.0	3,500	0.28	4.08	1.14	0.12	0.40	1.26	0.10	1.36				
Subtotal, Tributary 4			0.33		1.39	0.14	0.47	1.53	0.17	1.70				
Accumulated Total			2.77		10.52	1.20	3.97	11.72	1.05	12.77	36	0.00149		16.35
Tributary 5:														
A-5	13.7	50	0.004	5	0.02	0.01	0.01	0.03	0.04	0.07				
5	18.5	1,855	0.15	4.55	0.68	0.06	0.21	0.74	0.05	0.79				
Subtotal, Tributary 5			0.154		0.70	0.07	0.22	0.77	0.09	0.86				
Accumulated Total			2.92		11.22	1.27	4.19	12.49	1.14	13.63	36	0.16		16.97

SEWAGE FLOW CALCULATIONS
FOR HONOLULU INTERNATIONAL AIRPORT AND
AIRPORT INDUSTRIAL AREA
FOR THE YEAR 2010

Zone	Area (ac)	Equivalent Population	Qav (mgd)	Flow Fact.	Qmax (mgd)	Dry I/I (mgd)	Qav (mgd)	Qmax (mgd)	Wet I/I (mgd)	Qpeak Qv (mgd)	Pipe Dia (inches)	Slope (ft/ft)	Vel. (ft/sec)	Qa (mgd)
Tributary 6:														
Halsey/ Radford Terrace	204.4	3,580	0.29	4.0	1.16	0.13	0.42	1.29	0.26	1.55				
Subtotal, Tributary 6			0.29		1.16	0.13	0.42	1.29	0.26	1.55				
Accumulated Total			3.21		12.38	1.40	4.61	13.78	1.40	15.18	36	0.003		23.57
Tributary 7:														
Radford Terrace	27.6	300	0.02	5	0.10	0.01	0.03	0.11	0.03	0.14				
Kelly's Drive Inn	2.5	350	0.03	5	0.15	0.01	0.04	0.16	0.01	0.17				
5	23.86	2,386	0.19	4.30	0.82	0.08	0.27	0.90	0.07	0.97				
Subtotal, Tributary 7			0.24		1.07	0.10	0.34	1.17	0.11	1.28				
Accumulated Total			3.45		13.45	1.50	4.95	14.95	1.51	16.46	36	0.0023		20.53

SEWAGE FLOW CALCULATIONS
FOR HONOLULU INTERNATIONAL AIRPORT AND
AIRPORT INDUSTRIAL AREA
FOR THE YEAR 2010

Zone	Area (ac)	Equivalent Population	Qav (mgd)	Flow Fact.	Qmax (mgd)	Dry I/I (mgd)	Qav (mgd)	Qmax (mgd)	Wet I/I (mgd)	Qpeak Qv (mgd)	Pipe Dia (inches)	Slope (ft/ft)	Vel. (ft/sec)	Qa (mgd)
Tributary 8:														
South Ramp* (used car)	125	6,100	0.22	4.13	0.91	-	6.50	1.78	-	1.78				
Keehi Lagoon Dev	29.37	2,937	0.23	4.20	0.97	0.10	0.33	1.07	0.08	1.15	15"	.0107		
7	22.45	2,245	0.18	4.37	0.79	0.08	0.26	0.87	0.06	0.93				
Subtotal, Tributary 8			0.63		2.67	0.18	1.09	1.98	0.14	3.86				
Accumulated Total			4.08		16.12	1.68	6.04	18.67	1.65	20.32	42	0.0011		21.36

* SEWAGE PUMPED THROUGH FORCE MAIN FROM SOUTH RAMP AREA

EQUIPMENT AT SEWER PUMPING STATIONS

A) LAGOON DRIVE STATION "C"

Leed, lag and stand by pumps
Three Allis-Chalmers Centrifugal Model 250 F7M2 units
Serial No. 751-19022-1-2
Size 6" x 6" x 12" SC
Type NSWV
Capacity (each): 1,000 gpm
Head: 30 feet
Impeller diameter: 10.5"
Operation Speed: 1170 RPM

B. KAWELA STREET SEWER PUMPING STATION

Two Ecodyne Corp., Smith & Loveless Units
Size No. 4B2A
Serial No. 761160-113
Capacity (each): 200 gpm at 22 Ft TDH

C. ELLIOT STREET SEWER PUMPING STATION

Two Yeoman Pumps
Allis-Chalmers Induction Motor, 5 H.P.
NEMA Design "B", Type "C"
Capacity (each): 350 gpm
Head: 30 feet
Operating Speed: 860 RPM

LAGOON DRIVE SEWAGE PUMP STATION "C"-EXISTING FLOWS
(FLOWS IN THOUSANDS OF GALLONS)

1987												1988	
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB
32	94	61	47	54	61	47	57	209	111	86	143	90	110
32	93	20	33	51	75	62	48	88	128	134	132	141	80
26	97	40	34	47	56	41	61	184	90	99	124	119	89
32	82	41	34	68	62	48	61	101	110	141	124	118	90
40	94	40	20	53	62	61	61	183	113	114	125	118	83
33	72	41	33	41	66	48	54	102	105	133	94	125	62
33	72	26	27	68	51	84	67	152	114	115	124	94	93
39	79	28	40	55	65	45	64	111	120	143	146	101	110
37	65	39	33	34	67	69	61	153	106	107	88	80	
39	79	33	34	38	48	55	60	131	120	129	184	93	
33	80	40	20	82	67	41	69	117	99	122	92	101	
52	93	27	26	48	78	54	91	131	114	143	146	114	
32	42	38	34	47	49	69	120	138	106	100	246	103	
33	39	27	34	84	55	41	118	131	114	113	177	91	
54	27	33	33	62	62	54	140	130	106	123	188	100	
131	33	27	27	48	70	55	177	123	106	127	121	72	
113	40	47	40	69	69	76	148	123	123	145	202	108	
129	40	26	27	48	44	55	143	122	136	130	158	149	
129	40	46	33	62	61	55	194	144	71	131	130	102	
145	40	55	25	52	49	54	163	118	108	116	236	101	
117	34	19	34	51	69	68	110	84	108	109	268	99	
168	33	54	33	69	54	34	158	212	153	109	190	100	
110	33	27	27	55	70	62	169	120	80	167	143		
136	40	34	34	48	41	54	118	126	123	138	128	104	
57	40	37	33	48	76	54	147	102	109	124	149	131	
144	43	35	40	62	55	48	147	105	131	86	69	90	
88	40	27	54	48	48	60	154	103	124	161	118	103	
138	40	27	48	62	55	54	128	117	123	79	109	83	
88		25	61	48	61	61	117	118	123	116	132	103	
112		34	55	62	61	41	152	98	128	135	103	100	
65		33		48		47	142				147	84	
78	57	35	35	55	60	55	113	129	113	123	146	104	90

LAGOON DRIVE SEWAGE PUMP STATION "C"-EXISTING FLOWS
(FLOWS IN THOUSANDS OF GALLONS)

	1989					1990
DATE	AUGUST	SEPT.	OCT.	NOV.	DEC.	JAN.
1		126	110	74	107	84
2		133	110	110	93	93
3	113	126	110	65	94	87
4	91	124	99	118	94	87
5	93	124	154	118	101	81
6	94	124	140	118		81
7	94	136	157	111		83
8	99	106	166	116	76	87
9	103	113	166	111	73	87
10	85	108	166	111	75	86
11	82	108	167	112	137	99
12	82	108	174	112	180	56
13	76	107	163	112	97	56
14	76	114	157	110	104	56
15	76	147	330	154	85	56
16	82	114	353	73	85	109
17	69	260	247	114	87	73
18	76	260	197	101	97	93
19	75	259	199	101	88	86
20	85	140	217	101	88	86
21	84	106	209	102	96	87
22	86	121	220	105	85	87
23	78	165	240	101	84	100
24	76	178	227	100	84	86
25	75	175	180	99	84	117
26	83	173	215	99	87	88
27	103	107	287	100	88	88
28	103	115	317	101	96	88
29	104	114	320	101	85	88
30	119	115	331	94	84	92
31	119		302		84	

ARCHITECTURAL
STRUCTURAL
CIVIL
PLANNING

WILSON OKAMOTO & ASSOCIATES
ENGINEERS. ARCHITECTS AND PLANNERS

COMPUTED BY GGM
CHECKED BY CS
DATE 1-2 1990

WATER USAGE CALC.

PROJECT HIA UTILITY MASTER PLAN

WATER USAGE DATA OBTAINED FROM STATE DOT-A (SEE ATTACHED PRINT OUT)

YEAR	CUSTOMER TOTAL (THOUSAND GAL)	AIR FORCE (HAFB) (THOU. GAL)	USE BY OTHERS (CUST. TOTAL – AF) (THOU. GAL)
1988	261,185	209,309	51,876
1987	316,933	261,445	55,548
1986	189,898	162,935	27,054
1985	162,919	124,207	38,712

- ARCHITECTURAL
- STRUCTURAL
- CIVIL
- PLANNING

WILSON OKAMOTO & ASSOCIATES
ENGINEERS, ARCHITECTS AND PLANNERS

COMPUTED BY GGM
CHECKED BY CS
DATE 1-2 1990

WATER USAGE CALC.

PROJECT HIA UTILITY MASTER PLAN
SHEET NO. 2 OF 5 SHEETS

WATER USAGE DATA OBTAINED FROM STATE DOT-A (SEE ATTACHED PRINT OUT)

AIR FORCE WATER USAGE

YEAR	THOUSAND GAL				
1988	209,309	÷	365 =	0.573 MGD	
1987	261,445	÷	365 =	0.716 MGD	
1986	162,935	÷	365 =	0.446 MGD	
1985	124,207	÷	365 =	0.340 MGD	
1984	166,985	÷	365 =	0.457 MGD	
	924,488	÷	5 =	184,976	AVERAGE YEARLY

184,976 ÷ 365 = 507 = 0.51 MGD (5-YR AVE.)

AVE OF 1986, 1987 & 1988

209,309
261,445
162,935

633,689 ÷ 3 = 211,229
211,229 ÷ 365 = 579 = 0.579 MGD (3-YR AVE)

AVE OF 1987 & 1988

$$\frac{209,309 + 261,445}{2 \times 365} = 645 = 0.645 \text{ MGD (2-YR AVE)}$$

6 MO OF 1989 (JAN TO & INCLUDING JUNE) = 107,779

$$\frac{107,779}{183} = 588 = 0.588 \text{ MGD}$$

∴ USE 0.60 MGD BY AF

ARCHITECTURAL
STRUCTURAL
CIVIL
PLANNING

WILSON OKAMOTO & ASSOCIATES
ENGINEERS, ARCHITECTS AND PLANNERS

COMPUTED BY GEM
CHECKED BY CS
DATE 1-2 1990

WATER USAGE CALC.

PROJECT HIA UTILITY MASTER PLAN
SHEET NO. 3 OF 5 SHEETS

WATER USAGE (FIXED USE BY OTHERS)

YEAR	THOUSAND GAL		
1988	51,876 ÷ 365	=	0.142 MGD
1987	55,488 ÷ 365	=	0.152 MGD
1986	26,963 ÷ 365	=	0.074 MGD

134,327 ÷ 3 = 44,775

44,775 ÷ 365 = 0.122 MGD (3-YR AVE)

AVE OF 1987 & 1988

55,488 + 51,876 = 107,364

$$\frac{107,364}{2 \times 365} = 0.147 \text{ MGD (2-YR AVE)}$$

∴ SAY 0.135 MGD FIXED USE

WATER LOSS - YEARLY AVERAGES

YEAR	THOUSAND GAL		
1988	99,449 ÷ 365	=	0.272 MGD
1987	54,704 ÷ 365	=	0.150 MGD
1986	79,742 ÷ 365	=	0.219 MGD

233,895 ÷ 3 = 77,965

77,965 ÷ 365 = 0.214 MGD (3-YR AVE)

AVE OF 1987 & 1988

99,449 + 54,704 = 154,153

$$\frac{154,153}{2 \times 365} = 0.211 \text{ MGD (2-YR AVE)}$$

- ARCHITECTURAL
- STRUCTURAL
- CIVIL
- PLANNING

WILSON OKAMOTO & ASSOCIATES
ENGINEERS, ARCHITECTS AND PLANNERS

COMPUTED BY GGM
CHECKED BY CS
DATE 1-2 1990

WATER USAGE CALC.

PROJECT HIA UTILITY MASTER PLAN
SHEET NO. 4 OF 5 SHEETS

WATER LOSS
(IN THOUSAND GAL)

1989

AVE OF 8 MO. (JUNE HAD 737 SO WAS DROPPED)

$$\frac{1,646 + 3,150 + 5,128 + 4,268 + 5,136 + 5,776 + 9,335 + 8,922}{8}$$

= 5,420/MO

1988

AVE OF 9 MO. (HIGH FOR MAY, JUNE & JULY DROPPED)

$\frac{44,351}{9}$ = 4,928/MO

VS FOR 12 MO. $\frac{99,449}{12}$ = 8,287/MO

1987

AVE OF 8 MO. (MAR, JULY, AUG & NOV DROPPED BECAUSE INCONSISTENT)

$$\frac{5,022 + 4,941 + 3,911 + 6,632 + 6,432 + 5,397 + 2,786 + 7,779}{8}$$

= 5,363/MO

VS FOR 12 MO $\frac{54,704}{12}$ = 4,559/MO

1986

AVE OF 8 MO. (JAN, FEB, MAR & NOV DROPPED BECAUSE INCONSISTENT)

$$\frac{7,671 + 6,388 + 5,520 + 6,840 + 6,411 + 6,905 + 9,815 + 8,383}{8}$$

= 7,242/MO

VS FOR 12 MO $\frac{79,742}{12}$ = 6,645/MO

AVE OF ABOVE

$\frac{5,420 + 4,928 + 5,363 + 7,242}{4}$ = 5,738/MO

$\frac{5,738}{30}$ = 0.191 MGD

ARCHITECTURAL
STRUCTURAL
CIVIL
PLANNING

WILSON OKAMOTO & ASSOCIATES
ENGINEERS. ARCHITECTS AND PLANNERS

COMPUTED BY GEM
CHECKED BY CS
DATE 1-2 1990

WATER USAGE CALC.

PROJECT HIA UTILITY MASTER PLAN
SHEET NO. 5 OF 5 SHEET

AIRPORT TERMINAL WATER USE

YEAR	TERMINAL WATER USE	PASS/YR	GAL/PASS	
1988	309,174	21,721,452	14.2	DOES NOT INCLUDE USE BY OTHERS & WATER LOSS ~ 14.9 G/P
1987	304,608	20,380,042	14.9	
1986	277,601	19,076,395	14.5	
1985	266,105	17,497,204	15.2	

YEAR	TERMINAL WATER USE	USE BY OTHERS	TOTAL	PASS/YR	GAL/PASS	
1988	309,174	51,876	361,050	21,721,452	16.6	DOES NOT INCLUDE WATER LOSS ~17.0 G/P
1987	304,608	55,488	360,096	20,380,042	17.7	
1986	277,601	26,963	304,564	19,076,395	16.0	
1985	266,105	38,712	304,817	17,497,204	17.4	

YEAR	MASTER WATER METER	AIR FORCE	MASTER METER MINUS A.F.	PASS/YR	GAL/PASS	
1988	669,803	209,309	460,499	21,721,452	21.2	INCLUDES USE BY OTHERS & WATER LOSS ~ 20.2 G/P
1987	676,164	261,445	414,719	20,380,042	20.3	
1986	547,261	162,935	384,326	19,076,395	20.1	
1985	480,113	124,207	355,906	17,497,204	20.3	

TABLE 4-1D

PASSENGER FORECASTS
Scenario One
1988-2010
35% International Visitors by 2010

County/Airport	Actual 1988	1995	2000	2005	2010
STATEWIDE					
Overseas					
- Mainland	9,606,771	12,434,000	14,759,000	17,101,000	19,642,000
- International	3,757,669	5,852,000	7,269,000	8,810,000	10,576,000
Subtotal	13,364,440	18,286,000	22,028,000	25,911,000	30,218,000
Interisland	17,929,177	23,273,000	25,858,000	28,071,000	30,219,000
Total	31,293,617	41,559,000	47,886,000	53,982,000	60,437,000
% Overseas Passengers	42	44	46	48	50
HONOLULU INTERNATIONAL					
Overseas					
- Mainland	8,383,865	10,445,000	12,103,000	13,681,000	15,321,000
- International	3,757,669	5,852,000	7,269,000	8,810,000	10,576,000
Subtotal	12,141,534	16,297,000	19,372,000	22,491,000	25,897,000
Interisland	8,011,773	9,596,000	10,143,000	10,496,000	11,059,000
Total	20,153,307	25,893,000	29,515,000	32,987,000	36,956,000
Transit	1,568,145	1,000,000	1,000,000	1,000,000	1,000,000
VISITOR ARRIVALS	6,142,000	8,112,000	9,500,000	10,700,000	12,100,000
DBED[a]	6,142,000	8,192,000	9,497,000	10,745,000	
% International	28	32	33	34	35
DBED[b]	30.3	31.5	33.5	34.5	

a. Overseas Share (Mainland Plus International) increases from 42% in 1988 to 50% of Total Passengers by 2010 compared to 45% by 2010 for Tables 4-1A, B and C.

b. Based on unpublished (11/16/89) DBED visitor arrivals forecasts and includes 100 percent of European visitors.

Source: Aries Consultants Ltd.

(1/26/90)

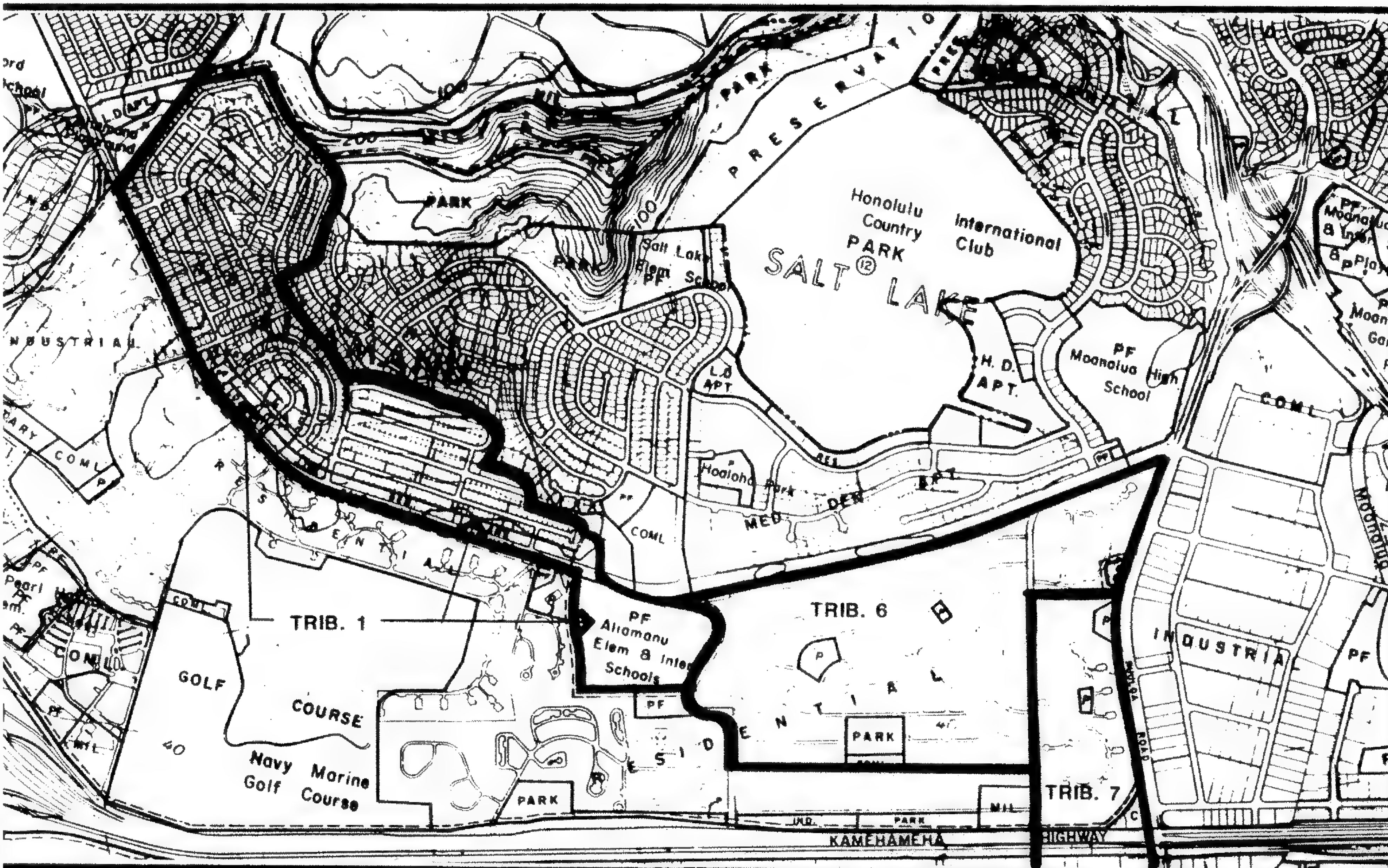
TABLE 7 - 7
AVIATION DEMAND FORECASTS
HONOLULU INTERNATIONAL AIRPORT
1989-2010

	Actual 1989	Forecasts 1995	2000	2005	2010
ANNUAL FORECASTS					
Passengers (Enplaned and Deplaned)					
Overseas-Mainland	8,675,016	10,445,000	12,103,000	13,681,000	15,321,000
Interisland	4,162,354	5,852,000	7,269,000	8,810,000	10,576,000
Interisland	8,612,016				
Total	21,449,386	25,893,000	29,515,000	32,987,000	36,956,000
Transit Passengers	1,167,954	1,000,000	1,000,000	1,000,000	1,000,000
Cargo and Mail (Enplaned and Deplaned)					
Cargo (tons)	359,132	455,000	540,000	625,000	700,000
Mail (tons)	41,036	45,000	50,000	55,000	60,000
Total	400,168	500,000	590,000	680,000	760,000
Aircraft Operations					
Air carrier	194,347	221,500	231,000	234,000	244,000
Commuter/air taxi	64,348	110,000	124,000	133,000	147,000
General aviation	100,287	110,000	115,000	125,000	130,000
Military	44,653	45,000	45,000	45,000	46,000
Total	403,635	486,500	515,000	537,000	566,000
Based Aircraft	204	220	225	230	240

a. Data from State of Hawaii Department of Transportation and FAA Air Traffic Control Tower

Source: Aries Consultants Ltd.

04/22/90

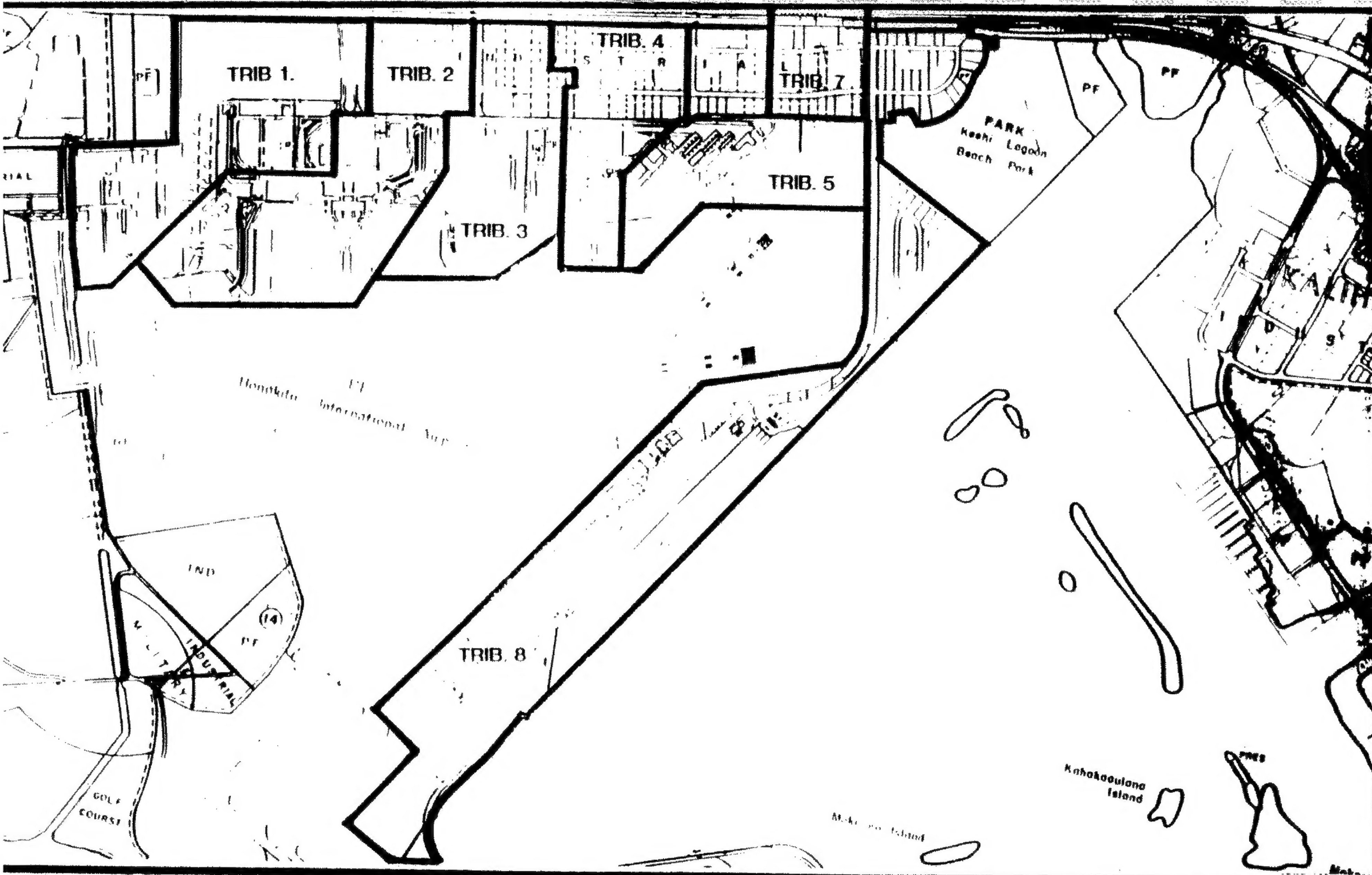


WILSON OKAMOTO & ASSOCIATES, INC.

SEWER TRIBUTARY AREAS

HONOLULU INTERNATIONAL AIRPORT

FIGURE 11

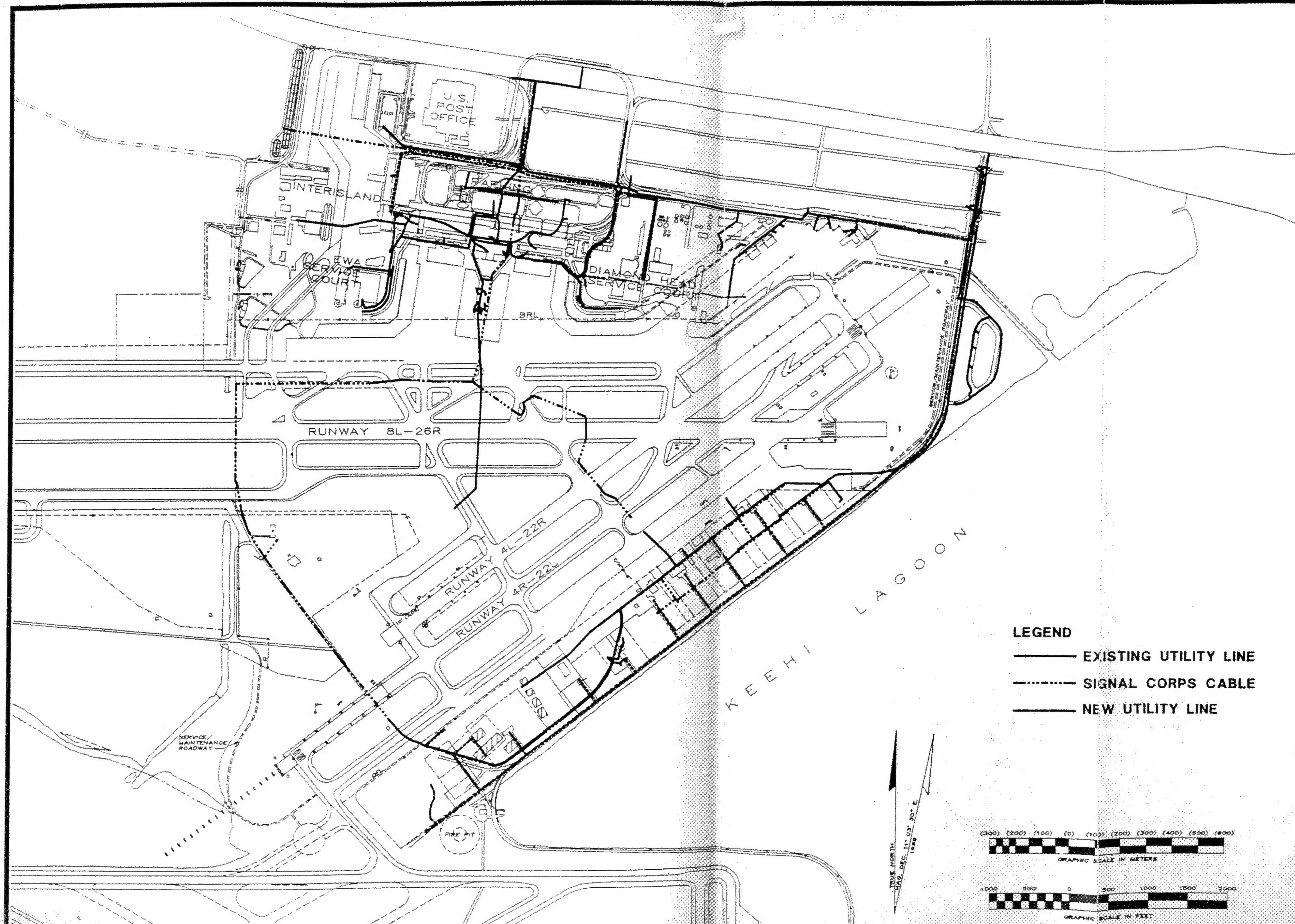


SEWER TRIBUTARY AREAS

WILSON OKAMOTO ASSOCIATES, INC.

HONOLULU INTERNATIONAL AIRPORT

FIGURE 12



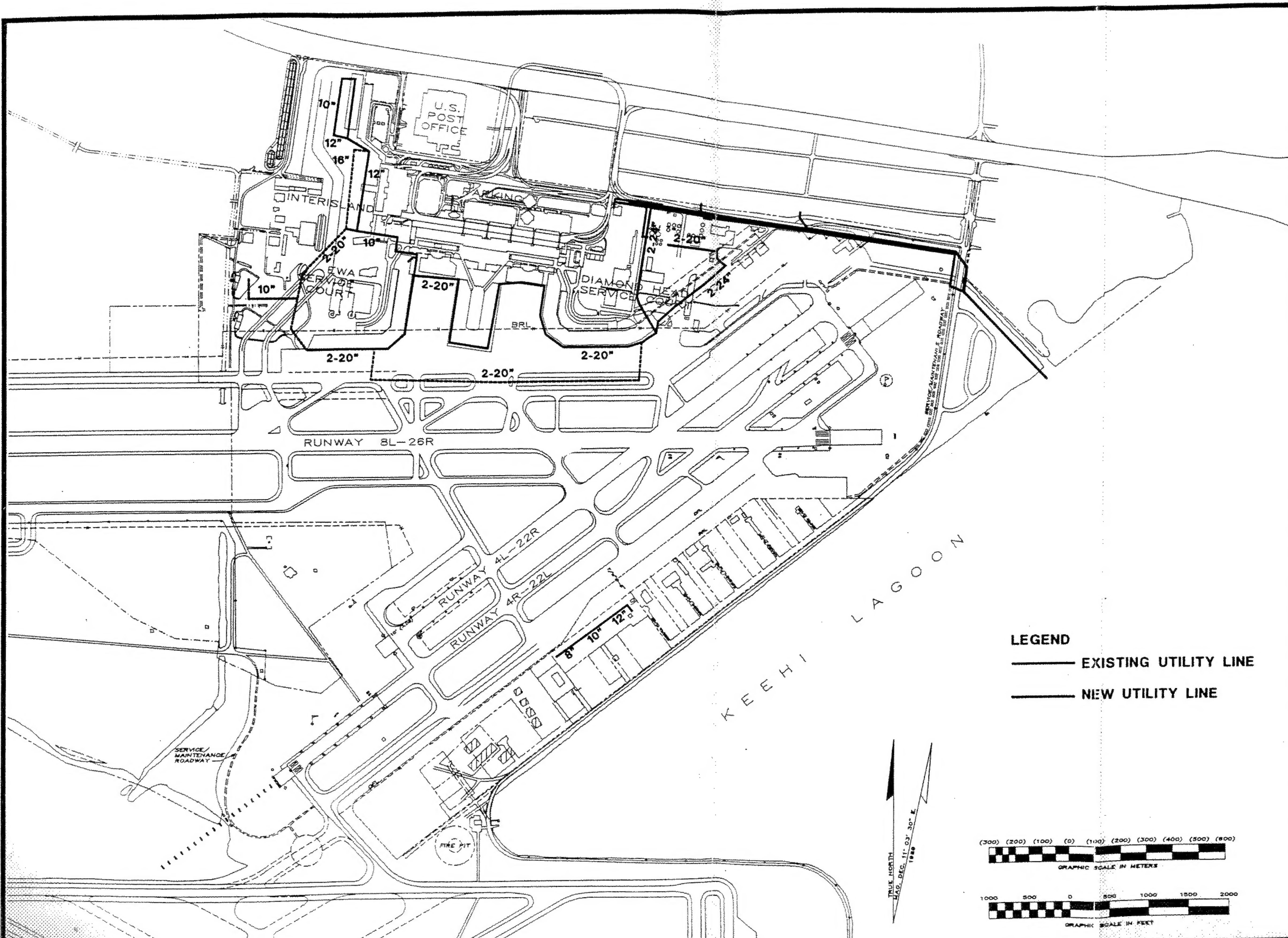
WILSON OKAMOTO & ASSOCIATES, INC.
ENGINEERS • ARCHITECTS • PLANNERS
1150 S. King St. Suite 800
Honolulu, Hawaii ph. 531-5261

HONOLULU INTERNATIONAL AIRPORT UTILITIES EVALUATION

UTILITY PLAN

COMMUNICATIONS SYSTEM

FIGURE 8



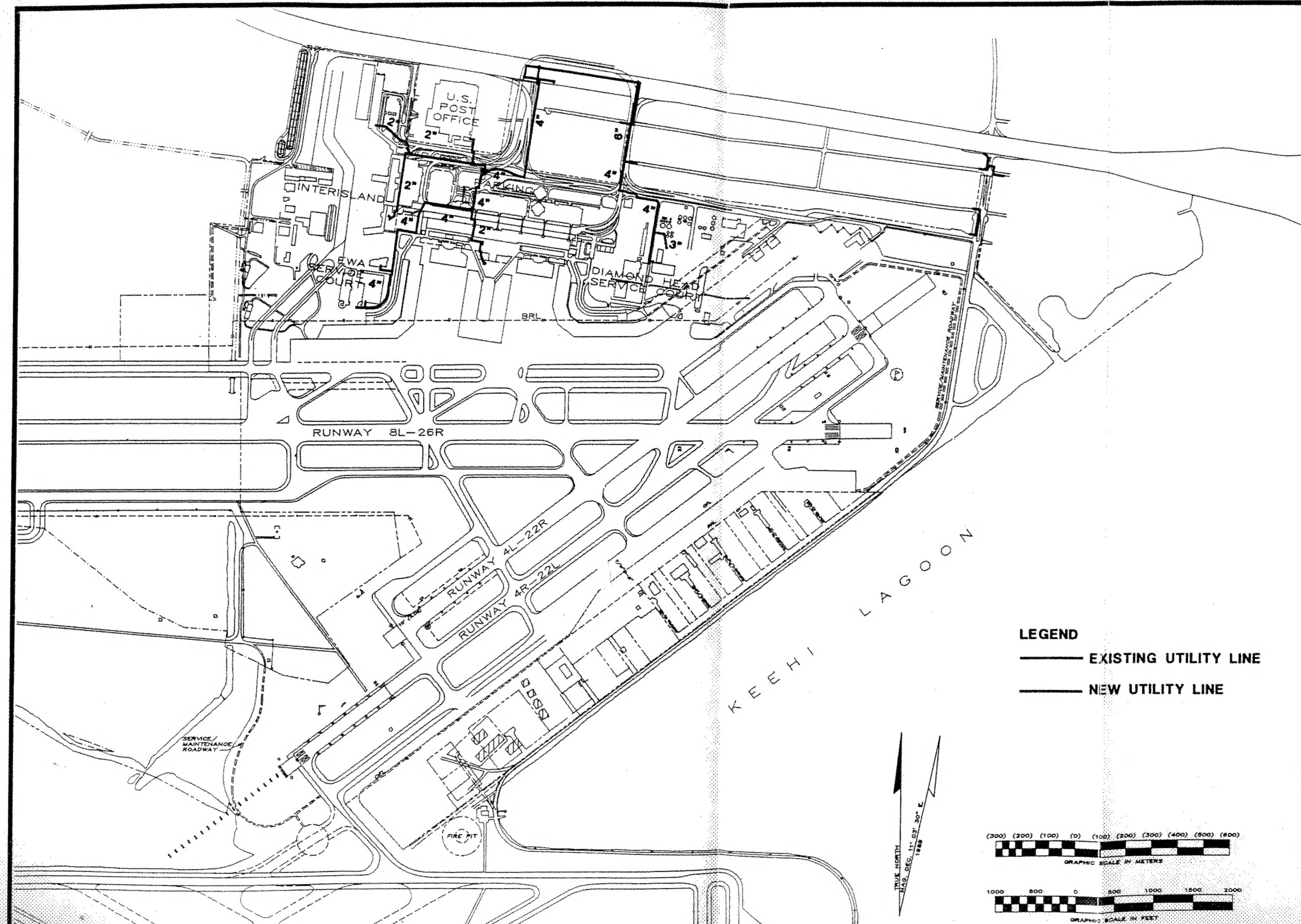
WILSON OKAMOTO & ASSOCIATES, INC.
ENGINEERS • ARCHITECTS • PLANNERS
1150 S. King St. Suite 800
Honolulu, Hawaii ph. 531-5261

HONOLULU INTERNATIONAL AIRPORT UTILITIES EVALUATION

UTILITY PLAN

AVIATION FUEL DISTRIBUTION SYSTEM

FIGURE 9



WILSON OKAMOTO & ASSOCIATES, INC.
ENGINEERS • ARCHITECTS • PLANNERS
1150 S. King St. Suite 800
Honolulu, Hawaii ph. 531-5261

HONOLULU INTERNATIONAL AIRPORT UTILITIES EVALUATION

UTILITY PLAN

SYNTHETIC NATURAL GAS DISTRIBUTION SYSTEM

FIGURE 10